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ABSTRACT

This paper examines at how the rapid advance of technology is transforming education and educational institutions, particularly universities and higher education. The paper contends that the ultimate purpose of education is human resources development and that contemporary communication and information technologies hold the potential for re-engineering traditional education and for creating new information-era learning communities. The paper discusses: (1) the development of Pennsylvania State University as a land grant university and its recent work in futures planning for institutional change in response to new technological and global developments; (2) the global context of technological development and the world economy; (3) human resources development and strategic planning for human resources development, focusing on economic and technological variables and on analysis of organizational change; (4) American education and its need for equity and quality, particularly in the elementary and secondary school levels; (5) a proposed role for land grant "communiversities" as a means to meet society's educational needs; and (6) collaborative educational developments in various parts of the Pacific Rim as an example of an emerging "globalversity." The paper concludes with a call for restructuring systems and human resources development infrastructure to produce knowledge workers for the new information era. (Contains 121 references.) (JB)

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ED 381 046

NEW HABITS OF MIND AND HEART: UNIVERSITY, COMMUNIVERSITY, & GLOBALVERSITY

by

WARREN H. GROFF

FALL 1994

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NEW HABITS OF MIND AND HEART: BUILDING LEARNING COMMUNITIES

Ponder the following advances in technology:
In 1955, it was hand set type and the platen press.
In 1981, it was the PC.
In 1985, it was desktop publishing.
In 1989, it was voice activated technology and desktop presentations with sophisticated graphics.
In 1993, it was voice activated typewriters and electronic books.
In 1994, it is multilingual continuous voice activated desktop videoconferencing which minimizes geographic, language, physical and temporal restrictions.
In 1995, it will be asynchronous transfer mode (ATM) technology with continuous voice activated software on a PC using cellular communications technology to access databases through local area and wide area networks.

Abstract

Between now and the year 2000, educators, community leaders, and policy makers in the United States will face challenges and make decisions that will determine the quality of life for a majority of Americans in the first half of the 21st century. An ultimate purpose of education is human resources development -- to provide society with the critical mass of intellectual capital and competent workforces to function culturally, socially, economically, technologically, and politically in the world of which they are a part. To accomplish that ultimate purpose, leaders implement planning processes to (a) guide policy-making, (b) develop institutions, and (c) allocate resources.

People are surrounded with technologies, undreamed of a generation ago, which make it possible to transmit data, voice, and video instantaneously almost anywhere in the world and simultaneously in several different languages. Although these technologies are becoming commonplace in business and are sometimes available to children in homes, they remain largely unused in traditional education. Without access to the latest contemporary technology, a learner is receiving less than a complete education. In addition, global competitiveness is providing impetus for collaboration and strategic alliances, competencies and skills usually not encouraged in traditional education.

Contemporary communication and information technologies hold the potential for (a) re-engineering traditional education and (b) creating entirely new info era learning communities. This paper discusses the evolution of "An Info Era Land Grant Globalversity" and the role of an Alumni Society in "Building Learning Communities."

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INFRASTRUCTURE CHALLENGES

> The biggest "Infrastructure" challenge for this country in the next decade is not the billions needed for railroads, highways, and energy. It is the American school system, from kindergarten through the Ph.D. program and the post-graduate education of adults. And it requires something far scarcer than money -- thinking and risk-taking.
>
> Peter Drucker, "The Coming Changes in Our School Systems," The Wall Street Journal, March 3, 1981.

A LAND GRANT UNIVERSITY

The Keystone State of Pennsylvania was pivotal during the colonial struggle for independence and the early emergence of the United States. Pennsylvania farms produced food that was distributed throughout the colonies as the U.S. began to emerge during the agricultural era. Advances in science and technology in the Keystone State in the early 1800s, positioned Pennsylvania well to emerge a leader among states during the industrial era. The Morrill Land Grant Act of 1862 offered each state free public land to create institutions of higher learning where "the leading object shall be ... to teach such branches of learning as are related to **agriculture** and the **mechanical arts** ... in order to promote the **liberal and practical education** of the industrial classes in the several pursuits and professionals of life." The U.S. was pre-eminent during both the agricultural and industrial eras. Through the Marshall Plan, the U.S. provided economic and technological assistance to rebuild nations that were devastated during World War II. Advances in science and technology in Pennsylvania and elsewhere assisted in creating the infrastructure that gave rise to the global interdependent economy that is emerging today.

The Pennsylvania State University was founded in 1855 and was designated Pennsylvania's land grant institution in 1863. Much of Pennsylvania's emergence as an agricultural and industrial era powerhouse was attributable to (a) a commitment to basic research and (b) its dedication to use new knowledge in producing high quality workforces for a diverse array of workplaces in agriculture, manufacturing, education, engineering, health care, etc. The College of Education evolved into the professional school established to conduct basic research in learning and teaching and to coordinate programs for the preparation of teachers and other personnel who work in education and related services.

The PSU College of Education Alumni Society (AS) has been an advisory body to three deans over the past 25 years. The first 10 years of the AS evolution occurred during an era of **expansion** of educational opportunity. The second 10 years of the AS maturation occurred during a **modernization** era and can be characterized by some advances in education technology and use of strategic planning. The AS Board of Directors began a strategic planning process which paralleled the College of Education process through "Launching A New Era of Equality and Excellence in Education" in 1985; the plan was adopted in 1988. The last five years of AC maturation occurred during a period in which a University Future Committee was created to recommend to the President what can be combined or eliminated and how to improve the quality of what remains.

THE GLOBAL CONTEXT

The United States became pre-eminent during the industrial era. Immediately after World War II, the U.S. had the biggest market in the world and generated 75% of the World's Gross Product (WGP) which was almost eight times as large as the rest of the world. The U.S. was wealthier than any other nation. In the 1950s, the U.S. had a per capita income twice that of the next country and eight times that of Japan. The U.S. could afford to do large scale projects that other countries could not undertake. U.S. citizens could afford goods and services that people in other countries could not purchase.

A great deal of the U.S. pre-eminence was attributable to the investment in research and development, evolution of planning and management know-how and technology, and research universities that produced intellectual capital. During and immediately after WW II, the U.S. created the largest R & D infrastructure in the world. Investment in the scientific establishment by the federal government and the private sector was unparalleled in the world. Product development required new ways of planning, managing, and evaluating the continuum extending from nurturing of ideas through production, distribution, and service of goods. Advances in science and technology increased in complexity.

Major **expansion** occurred in the 1950s and 1960s in all sectors of the economy, particularly manufacturing and services. Rapid advances in science and technology yielded global competition and **modernization** at an accelerating rate. Establishments that survived, modernized with new technology in the 1970s and early 1980s.

Pennsylvania was a world class leader during the industrial era, primarily because of natural resources such as anthracite coal and the infrastructure to produce steel. The collapse of big steel is an example of the failure to invest in **new technology** as well as deal with **bureaucracy** and **productivity** through **human resources development.** Between 1974 and 1986, 337,552 jobs were lost and brought the death of Pittsburgh's Mongahela Valley as America's steel capital (Hoerr, 1986).

During the 1980s, it became apparent that modernization of industrial era establishments was necessary, but insufficient. The surviving manufacturing sector establishments modernized several times with contemporary technology and then began to **restructure.** More important, however, a few establishments began to recognize the centrality of **HUMAN RESOURCES DEVELOPMENT** committed to **Total Quality** with world class **Benchmarking Standards.**

As the U.S. entered the 1990s, most of the above-mentioned and other advantages had disappeared. The U.S. had gone from 75% of the WGP in 1945 to less than 25% of the WGP in 1989. Manufacturing was particularly hard hit as can been seen in the decline of phonographs, color televisions, computer numerically controlled machines, and aircraft (see Attachment 1). With regard to per capita purchasing power, the U.S. is now only the ninth wealthiest country having been surpassed by Austria, Denmark, Germany, Japan, Norway, the Netherlands, and Sweden.

Three major areas are emerging in a new world economy. The European Union has 350 million people in 12 nations with a per capita income larger than that of the U.S.; The EU is moving toward integration. The North American Free Trade Agreement has a total population 320 million people in Canada's 10 provinces, Mexico's 32 states, and the 50 U.S. states. The most dynamic region of the world is the Pacific Rim. The Republic of China (ROC) is currently the fastest growing economy. ROC has 22% of the world's population and has the fastest growing and largest middle class of people who want to buy products made by Western countries. Three-quarters of the economic opportunities are located outside the U.S. Furthermore, Western democracies will have a decreasing share of the world's population, dropping from 22% in 1950 to 15% in 1985, and to 9% in 2020.

The Organisation for Economic Co-operation and Development (OECD) has developed a uniquely internationally-comparable data base of indicators for sector analysis. The indicators for 13 of the 24 member nations cover five broad areas of manufacturing performance: business enterprise research and development; investment; international trade; employment; and production. Trends from an OECD study are
- The pre-eminence that the U.S. enjoyed across a wide variety of sectors has declined over the past two decades, but the U.S. still enjoys a considerable lead in many sectors, particularly the high technology industries.
- Where the U.S. has lost ground, it has usually been Japan that has gained. In many cases these gains have been usually broad-based, emanating from technology sectors.
- As Japan has gained, the group of European Community countries studied have seen the erosion of their position.

The globalization of the world economy is causing all nations to analyze human resources development policies and systems. Education, K through postgraduate, and training will be modernized and restructured through (a) internal initiatives and/or (b) forces external to the enterprise. The OECD Education Committee is completing a three year analysis of "The Changing Role of Vocational and Technical Education and Training" (OECD). The nations that co-create a clear vision of the future and re-engineer education will be more competitive and enjoy a higher quality of life.

U.S.'s WORLD SHARE

	1970	1987
Phonographs	90%	1%
Color Televisions	90%	10%
Computer Numerically Controlled Machines	100%	35%

Turning to Technology. Southern Growth Policies Board, 1989, p.7.

U. S. AIRCRAFT MANUFACTURING WORLD MARKET SHARE

1969	91%
1993	67%

HUMAN RESOURCES DEVELOPMENT (HRD)

Throughout the industrial era, communities of learners invented new **mosaics of education experiences** and formatted them within the limitations of the know-how, understandings, and technology of the times. The inventions included secondary schools, junior high schools, home economics and industrial arts courses, vocational tracks, jointures, area vocational- technical schools, middle schools, etc. In postsecondary education, society created normal schools that evolved into state teachers colleges, state colleges, and state universities. A broad range of institutes and two-year institutions were created. The educational infrastructure was based on provider-controlled principles.

The above-mentioned contemporary traditional education institutions represent only a very small part of the total resources that are allocated to meet the workforce training requirements for today's workplaces. Business and industry spend on training over five times the amount of money appropriated for public education. There are several types of HRD. The investment in HRD includes apprentice training, industry specific training such as in printing and graphic arts, job corps, prison rehabilitation and training, etc.

It is important to examine the "ends" of the education enterprise as a prelude to discussing the "means." Over the years several groups and persons have defined the purposes of elementary and secondary education in a democracy. The purposes of education in the American demographic society are the development of each person as (a) a **worker**, (b) a **citizen**, and (c) an **individual**. Thus, basic education in the American democratic society has a **vocational**, a **political**, and a **personal** dimension.

Democratic societies throughout the world differ in the way in which they organize to meet the needs of the culture and economy of which they are a part. In addition to structure, policy and decision making range from highly centralized to highly decentralized "home rule." Education is essentially a state function in the U.S. The State Board of Education in Pennsylvania has implemented a strategy to help school boards and the communities they serve to develop new habits of mind and heart. Just as industrial era manufacturing has gone through several stages of modernization and restructuring, so too education and training must progress through stages of development. Policy makers, leaders, and service providers are being asked to break out of the mindset of industrial era formats and to creatively envision (a) **cognitive outputs** necessary for the 21st Century and (b) **alternative formats** with more effective learning experiences for very diverse populations. The human resources development strategy for creatively envisioning alternative futures is **strategic planning.**

STRATEGIC PLANNING FOR HRD

The initial commitment to strategic planning by the PSU Board of Trustees in 1983 authorized President Bryce Jordan to develop a process which would help PSU with reaffirmation of accreditation by the Middle States Association of Colleges and Schools in 1986. A University Planning Advisory Committee (UPAC) provided oversight to the process. In the College of Education, focused discussions led to the consolidation of some programs and the elimination of a few programs. UPAC reviewed unit plans and produced a set of priorities for President Jordan and the Board of Trustees. Strategic planning initiated by the College of Education Alumni Society complemented the process and resulted in (a) clarity in mission and programs of the Alumni Society, (b) elevation in the level of awareness of strategic planning as a human resources development strategy and (c) raising friends and raising money for the College of Education for specific purposes such as technology.

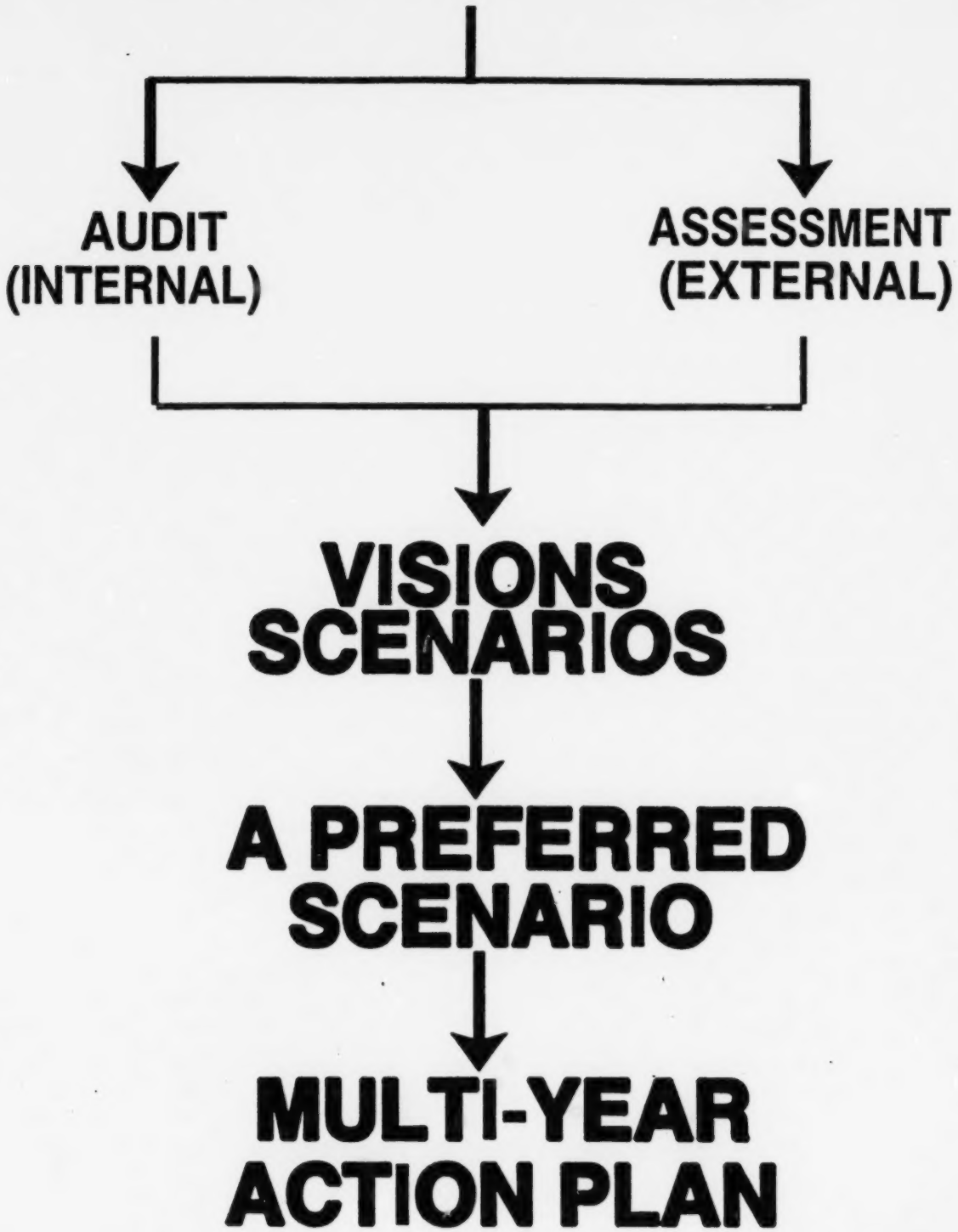
Components of Strategic Planning

Strategic planning includes two analyses, an audit of an establishment's **internal environment** and an assessment of an establishment's **external environment**, for the purpose of creating and co-creating **visions** of the future, a number of alternative scenarios. After alternative scenarios have been co-created more fully, then a multi-year operational or tactical action plan is specified to which resources are linked (see Attachment 2). Planning and budgeting must be linked together to guarantee the process is more than an academic exercise and will yield a high return on investment for all consumers and stakeholders.

Many institutions have improved the audit of the internal environment primarily because of demographic change or budget constraints. Even with the emphasis on student learning outcomes assessment and the total quality movement, very few education establishments have pursued program review from a perspective of workforce and workplace needs. A few institutions have made some progress on assessing the external environment - demographic, social economic, technological, governmental planning variables. Very few institutions have created and co-created visions of the future and specified alternative scenarios with the intellectual rigor that embraces the latest know-how in the art and science of strategic thinking. What will life and work be like in the 21st Century with more complex advances in science and technology? What competencies and skills are essential to function in the workplaces of the 21st Century?

Assessment of the external environment requires the systematic extrapolation of data and their interpretation. Then, systems must be analyzed. An example is provided of a few variables and their relation to education and training.

ANALYSIS


AUDIT
(INTERNAL)
ASSESSMENT
(EXTERNAL)
VISIONS
SCENARIOS
A PREFERRED
SCENARIO
MULTI-YEAR
ACTION PLAN

Economic and Technological Variables

The Census Bureau collects information about employment outlook using ten major categories, four of which are labeled goods (agriculture, mining, construction, and manufacturing) and six of which are services (finance, government, transportation and utilities, self-employed, wholesale and retail, and services). The ten categories of economic establishments are a composite of many types of businesses including manufacturing (#4) and services (#9). Two areas in manufacturing that are essential to the viability of the U.S. are **printing and publishing** #8 and **electric and electronic equipment** #9 (see Attachment 3). Data are collected in years ending in a "2" and a "7."

The Bureau of Labor Statistics analyzes number and type of jobs using the Standard Industrial Classification (SIC). BLS uses historical data with a series of variables to project changes in employment outlook. Although national trends are rather accurate, regional and state profiles are dependent on local variables such as economic restructuring.

Although the term "policy" applied to all categories of variables, it is particularly useful to understand how policy influenced advances in science and technology. During WW II and the Cold War, investments were made to develop the critical mass of intellectual capital and create the **research and development infrastructure** to produce the goods and processes to wage war successfully. Communication is essential in each activity from R & D to waging an integrated air, sea, and land war. ARPAnet was created in 1969 to enable Department of Defense research sites to share information quickly. In 1986, the National Science Foundation created NSFNET to enable researchers and scholars to share in the benefits of network information exchange. The NSF funded **five supercomputer centers**, including the Pittsburgh Supercomputer Center (PSC) in 1986. PSC is a national resource for high performance computing that is becoming increasingly available to schools and colleges.

U.S. Technology Policy, Emerging Technologies: A Survey of Technical and Economic Opportunities, and Gaining New Ground by the Council on Competitiveness provide insight into strategy for economic development. Gaining New Ground states, "There is broad domestic and international consensus about the **critical generic technologies** driving economic growth." Critical areas include information technologies, computers and software, and telecommunications.

The U.S. has created a public and private research and development infrastructure that is unparalleled in history. The U.S. government alone funded $25 billion in R & D at 700 centers employing 100,000 scientists and engineers in 1991-92. The private sector investment in R & D is many

ECONOMIC ESTABLISHMENTS

1. Agricultural services, forestry, fisheries
2. Mining
3. Contract construction
4. Manufacturing
5. Transportation & public utilities
6. Wholesale trade
7. Retail trade
8. Finance, insurance, real estate
9. Services
10. Non-classified

MANUFACTURING (#4) ESTABLISHMENTS

1. Food & Kindred Products
2. Tobacco
3. Textile Mill Products
4. Apparel & Other Textile Products
5. Lumber & Wood Products
6. Furniture & Fixtures
7. Paper & Allied Products
8. Printing & Publishing
9. Chemical & Allied Products
10. Petroleum & Coal Products
11. Rubber & Misc. Plastic Products
12. Leather & Leather Products
13. Stone, Clay & Glass Products
14. Primary Metal Industries
15. Fabricated Metal Products
16. Machinery, Except Electrical
17. Electric & Electronic Equipment
18. Transportation Equipment
19. Instruments & Related Products
20. Miscellaneous Manufacturing Industries
21. Administrative & Auxiliary

SERVICES (#9) ESTABLISHMENTS

1. Hotels & Lodging Places
2. Personnel Services
3. Business Services
4. Auto Repair Services
5. Miscellaneous Repair Services
6. Amusement & Recreational Services
7. Health Services
8. Legal Services
9. Educational Services
10. Social Services
11. Museums, Botanical, Zoological
12. Membership Organizations
13. Miscellaneous Services
14. Administrative & Auxiliary

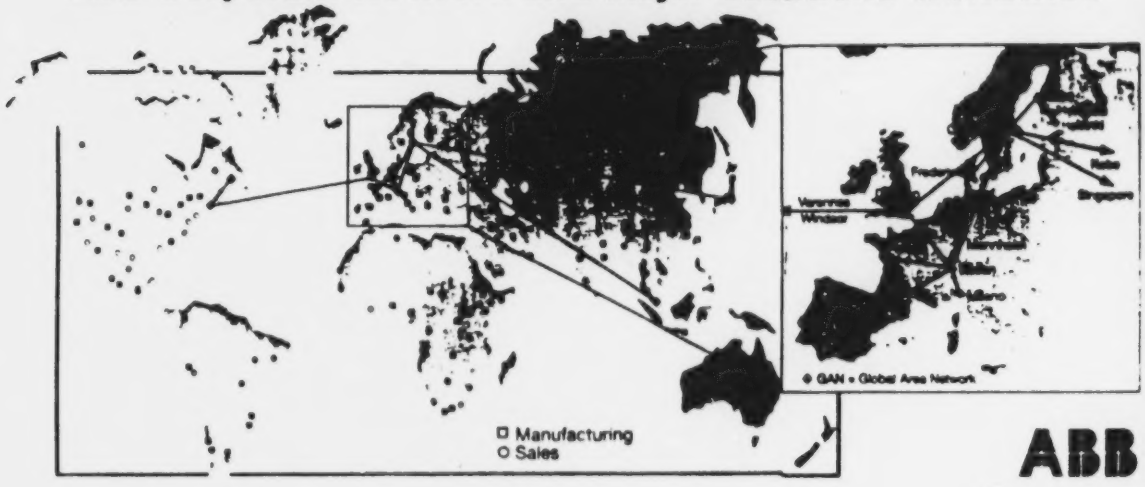
times that amount and sometimes is geared for multi-national utilization. The intent is to create break-through science and technology, to distribute products and services more quickly than competition and to realize the benefits - jobs, standard of living, quality of life, profits, power, etc.

Technological variables are not classified in a manner such as economic variables. Some technologies apply to all establishments such as communication and information technology. Communication and information technologies are essential to everyone because of the relationship to **literacy, productivity, and democracy.** The information explosion has gathered force over the past 40 years. Creating "intelligence" via computer and dissemination by communication and information technologies is the classic tool for creating wealth (Wriston, 1992). Technologies are fundamentally changing the way communications occurs.

Global commerce is providing the impetus for the use of contemporary communication and information technologies in the delivery of education and training. Asea Brown Boveri (ABB) is the world's largest electrical engineering group and is renowned for its research, product development, low cost manufacturing, and the transfer of technology and know-how. ABB is a **highly decentralized** organization with business units distributed in **140 countries**, employing over **200,000 people**, with a net sales in excess of $30 billion U.S. (Telegate, 1993). ABB Corporate Network, ABB-CN, is used to communicate accurately and quickly through the concept of open communications which uses many types of transmittal media: data, text/fax, voice or image video. ABB-CN has been developed to provide various types of communications capabilities around the world for the exchange of drawings, proposals, and technical information.

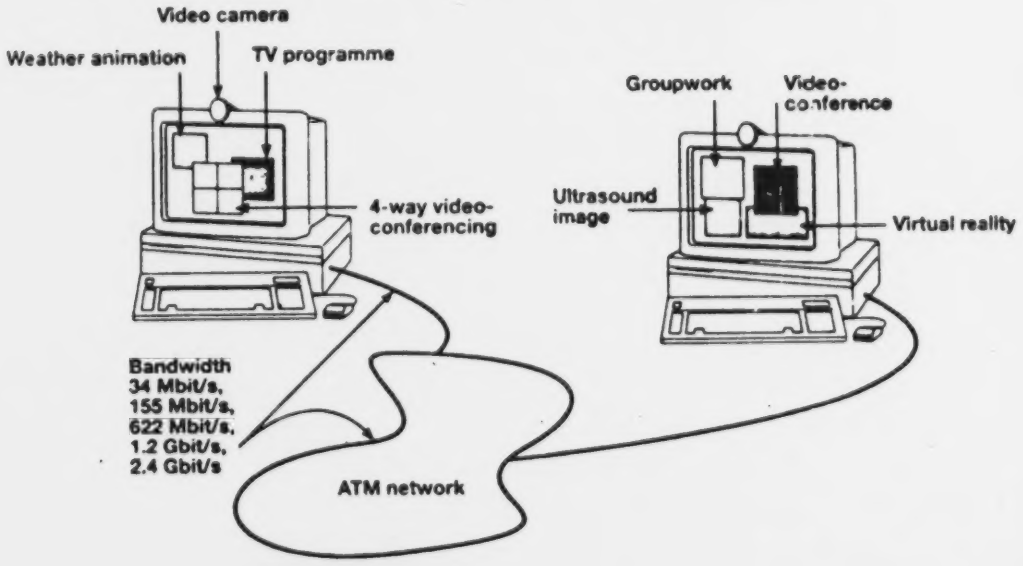
In Finland, ABB operates via a nationwide conglomerate of independent companies, ABB Group Oy, divided into more than 40 operating locations dispersed around the country with the head offices in Helsinki (see Attachment 4). ABB Group Oy makes use of the latest communications technologies including Telecom Finland's full service concept known as Telegate. On May 3, 1993, Telecom Finland announced the world's first commercial asynchronous transfer mode (ATM) unit which initially connects Helsinki with Tampere, 200 km to the north (Heinanen, 1993). ATM is a **fast packet switching technique** to transmit data efficiently in short, fixed size cells of knowledge at very high rates. Thus, Finland was the first country in the world to implement an ATM **distributed multimedia** communication network for the transmission of data, voice, and video simultaneously at speeds 1,000 times greater than had been possible prior to that date. The pilot lasted one year, during which time it evolved into full production of this strategically important **new backbone technology** (see Attachment 4).

ABB Corporate Network and Major Locations Worldwide



ABB

BROADBAND APPLICATION ENVIRONMENT



ATM

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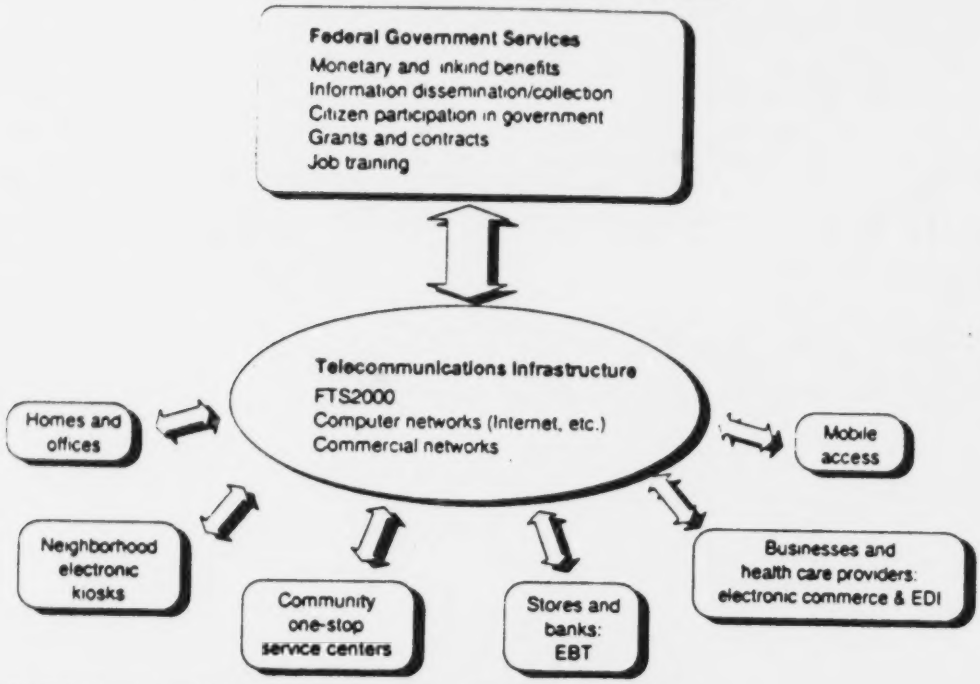
Telecom Finland is helping in numerous projects using mobile technology (Mobile, 1993). In cooperation with the National Research Centre for Welfare and Health, four communities volunteered to apply mobile communications to areas of health and welfare beginning in 1987. Ulvila, in western Finland, wanted to focus on the day care of children to improve the cooperation between parents, kindergarten, and community personnel. The results have been impressive. Beyond the clear savings in expenditure, the results have yielded (a) changes from a hierarchial structure of work to horizontal interactive networking; (b) changes in self confidence, communication skills, motivation to improve skills, and new possibilities to work better; and (c) creative meetings between producers and providers of health and social services. The producers had not envisioned all the possible applications of the new mobile communication technology and the social workers had not imagined all the possible application of the technology -- solutions to problems. Consumers and providers who use contemporary communication and information technologies are more likely to continue to use such systems in whatever role they perform -- care giver, educator, or health services provider. Judith Hatula (1994) is analyzing the research on neuro-linguistic programming and what other European Union telecom industry providers have done in HRD for the purpose of "Creation of a Human Resources Development Program to Affect Changes in Attitudes of Telecommunications Personnel to Improve Customer Service" at Telecom Finland.

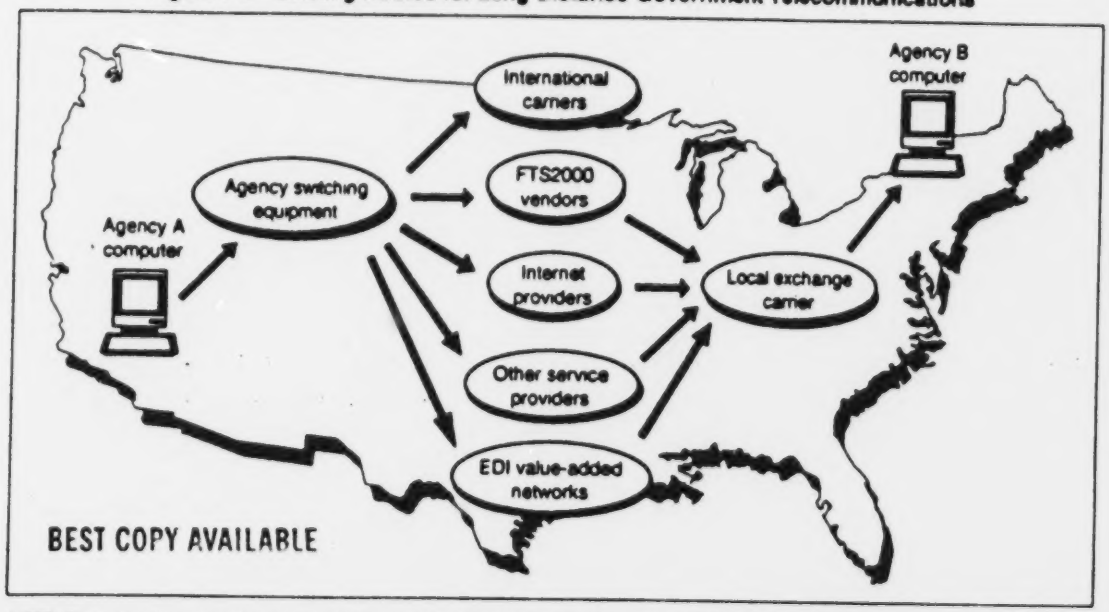
The U.S. National Information Infrastructure (NII) initiative has accelerated. Vice President Gore is chairing the initiative on Making Government Work: The Electronic Delivery of Federal Services (1993) and Creating A Government That Work Better and Costs Less (1993)(see Attachment 5). Commerce Secretary Brown chairs the Information Infrastructure Task Force Committee on Applications and Technology which produced Putting the Information Infrastructure to Work (1994) that addresses manufacturing, commerce, health care, learning, environment, libraries, and government service delivery (see Attachment 6). The Federal Quality Institute provides access to numerous total quality documents through its Information Network (1993). "Goals America: Educate America Act" (Public Law 103-227) refined the mission of the Office of Educational Research and Improvement in the U.S. Department of Education to assist in building "Pathways to a National Learning Community." Programs such as the Empowerment Zone and Enterprise Community hold the potential to fundamentally restructure access to public services as the local level. The Pennsylvania General Assembly passed Act 62 in 1993 to provide incentives to phone companies to accelerate deployment of their fiber optic networks.

Figure 3-1—Role of Telecommunications Infrastructure in Delivering Federal Services Via Six Points of Access



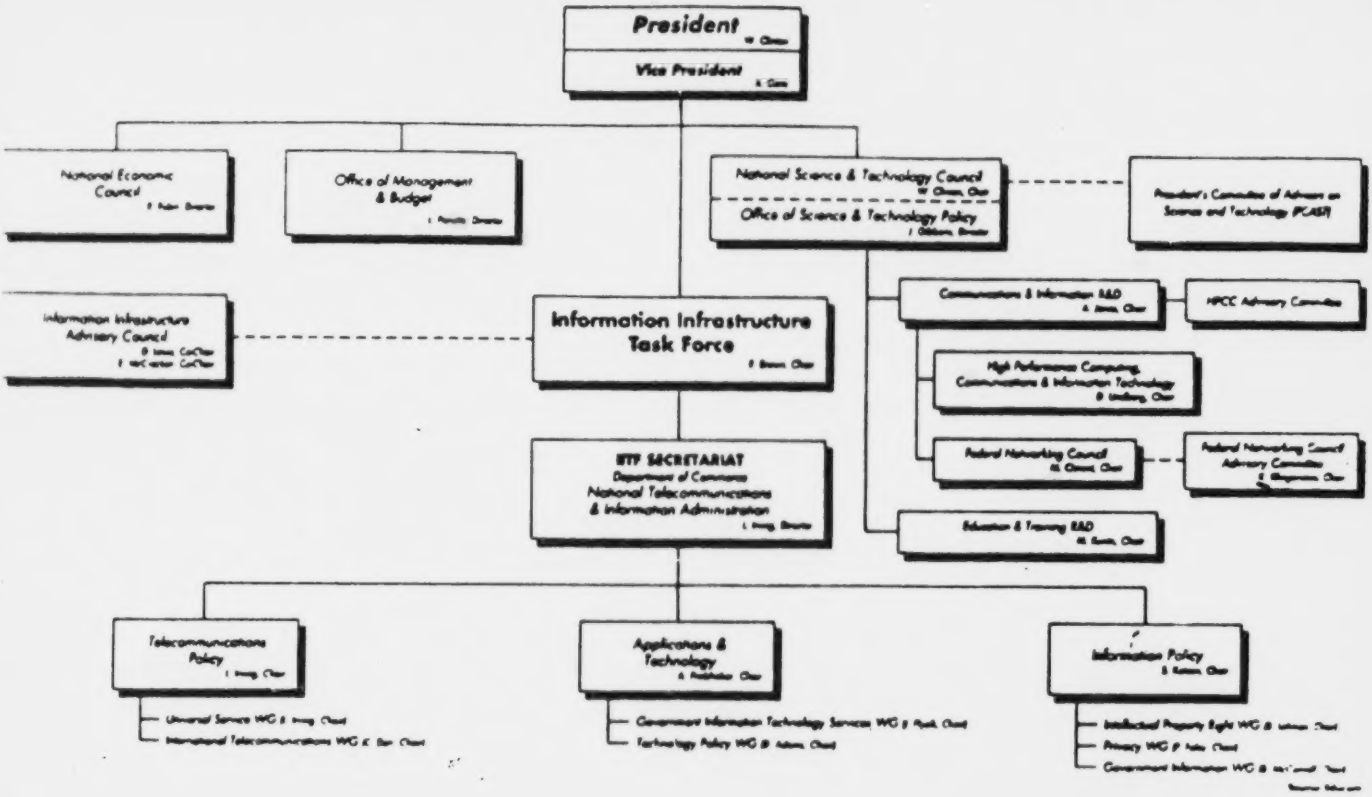
NOTE: The Federal services and infrastructure components shown are illustrative, not comprehensive.
KEY: EBT=Electronic Benefits Transfer; EDI=Electronic Data Interchange; FTS2000=the Federal long-distance telecommunications program
SOURCE: Office of Technology Assessment, 1993.

Figure 3-2—Existing Routes for Long-Distance Government Telecommunications



NOTE: The routes shown are illustrative. In this example, the sending agency (Agency A) switches the data directly to the appropriate telecommunications provider. At the receiving end, the local exchange carrier switches the data to the receiving agency (Agency B).
KEY: EDI=Electronic Data Interchange; FTS2000=Federal long-distance telecommunications program.

ORGANIZATION OF U.S. NATIONAL INFORMATION INFRASTRUCTURE INITIATIVE



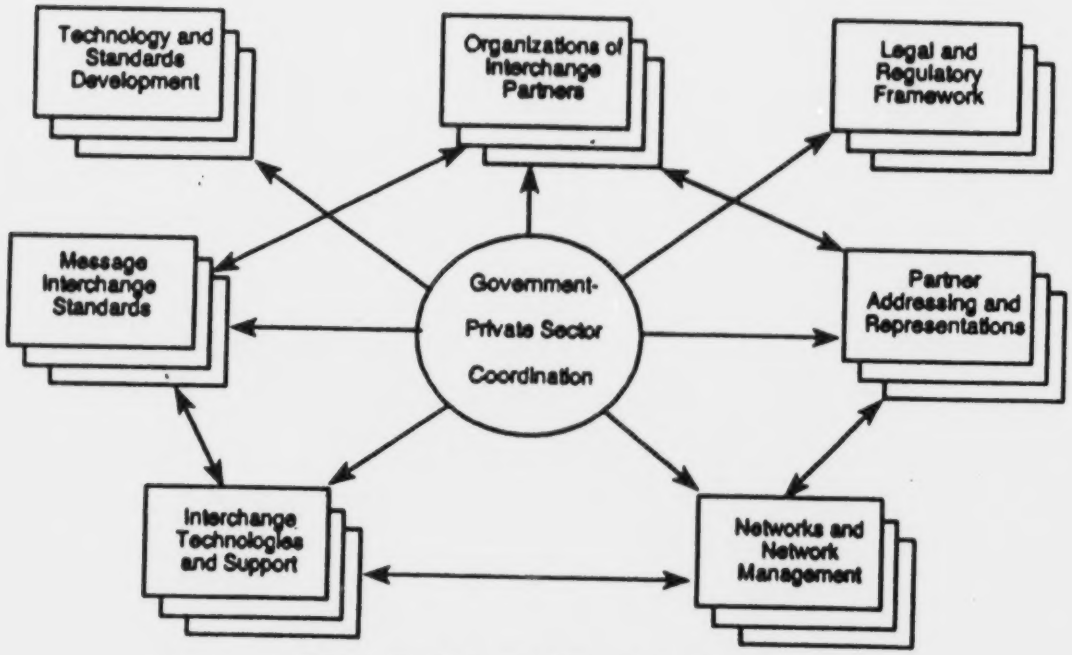


Figure 1. Planning for Global Electronic Commerce.

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Analysis of Change by Organizations

Many professional and industry specific establishments at national and state levels analyze advances in science and technology and their impact on economic variables, both establishments and jobs. The American Society for Training and Development (ASTD) is a national organization of individuals who have responsibility for education and training in the full array of establishments that represent all sectors of the U.S. economy. The American Society for Quality Control, with over 115,000 individual members and 900+ sustaining members in 230 local chapters in Canada, Mexico, and the U.S., is one of the largest and most diverse professional organizations dedicated to quality. Most national and state organizations analyze the change in technology and then sponsor training programs.

Commercial printing was the fourth largest manufacturing industry in 1992. Many companies do their own "inplant" printing. Prepress, press, and postpress have been used for describing the processes and technologies of the printing and publishing industry. Script can be written for an article on a PC in "a cottage" or "in the field" and transmitted electronically to a prepress system where it is combined with other information and then sent electronically to a pressroom for printing that may be quite a distance from where articles originated. Online electronic books are now being used and will grow in importance.

The Research and Engineering Council (REC) of the Graphic Arts Industry, Inc. in Chadds Ford, PA, monitors scientific and technological advances in printing and publishing and (a) synthesizes trends and issues and (b) conducts programs for the industry. Critical Trends for the 1990s (1989) and Critical Trends: Graphic Communications Industries (1994) are excellent examples of an assessment of the printing and publishing industry.

The Graphic Arts Technical Foundation (GATF) in Pittsburgh, PA, has engaged in task analysis for many years and converts the information into training programs for the industry such as a series of workshops on ISO 9000 Quality Standards. GATFWORLD contains relevant articles such as "Education and Training Matters - Graphic Arts Laboratory in the Year 2000" (Levenson, 1994) and a list of publications on electronic prepress. An annual 1994 Technology Forecast (1994) is a synthesis of trends on the economy, selected printing segments, work force issues, prepress, printing processes, and newly emerging print technologies.

Sections of Pennsylvania are evolving into a knowledge producing center in the new era. The New York-Philadelphia-Wilmington segment of the Boston to Washington corridor is home to some of the most advanced health care establishments

and headquarters for a great many multi-national corporations and new enterprises that produce and use the technologies that are critical in the 21st Century.

The Franklin Institute, Greater Philadelphia Economic Development Coalition (GPEDC), and the Technology Council of Greater Philadelphia (TCGP) which merged with the Technology Council of Central Pennsylvania (TCCP) to form the Eastern Technology Council attempt to promote economic development. The Franklin Institute has extensive experience with know-how and technology transfer through teacher education and inservice. In addition, with Drexel University and TCGP has proposed "The Greater Philadelphia Consortium for Science and Technology Education and Training: A Public/Private Partnership." GPEDC has a regional database index of major sources of information including (a) health care and (b) advanced materials (Greater, 1992). TCGP has a twofold purpose:

> We exist to help regional companies introduce more products into more markets faster, using more regional technology. We also place a priority on transferring knowledge and technology, in order to make small and large companies and our regional universities more globally competitive.

The Pennsylvania Technical Assistance Program, Governor's Response Team, and other organizations are critical players in the emerging new global information era.

Other regions in the U.S. promote economic development through analysis of science and technology. The Southern Governor's Association formed the Southern Technology Council in 1986 as an advisory body to the Southern Growth Policies Board on matters relating to technology creation, transfer, and application. The goals of STC are to provide a forum for the region to examine science and technology policies and share information, to encourage and facilitate technology development and diffusion, and to foster regional cooperation. Halfway Home and a Long Way To Go considers five cross-cutting themes while examining the past, present, and future as a prelude to stating ten regional objectives. Leading The Way Into The Nineties describes how 13 technical and community colleges in the STC region enhance manufacturing competitiveness for establishments that nationally make up 20% of the U.S. economy. Turning to Technology provides a vision of what the region needs to do in education, technological innovation, and technological diffusion and concludes, "The community and technical colleges are perhaps the South's premier strength." The goal of The 1992 Commission on the Future of the South was to provide leaders of the South with a visionary but pragmatic plan for making this region globally competitive by (1) improving the quality of human resources; (2) strengthening business enterprises; and (3) creating state-of-the-art public infrastructure.

AMERICAN EDUCATION: EQUALITY AND QUALITY

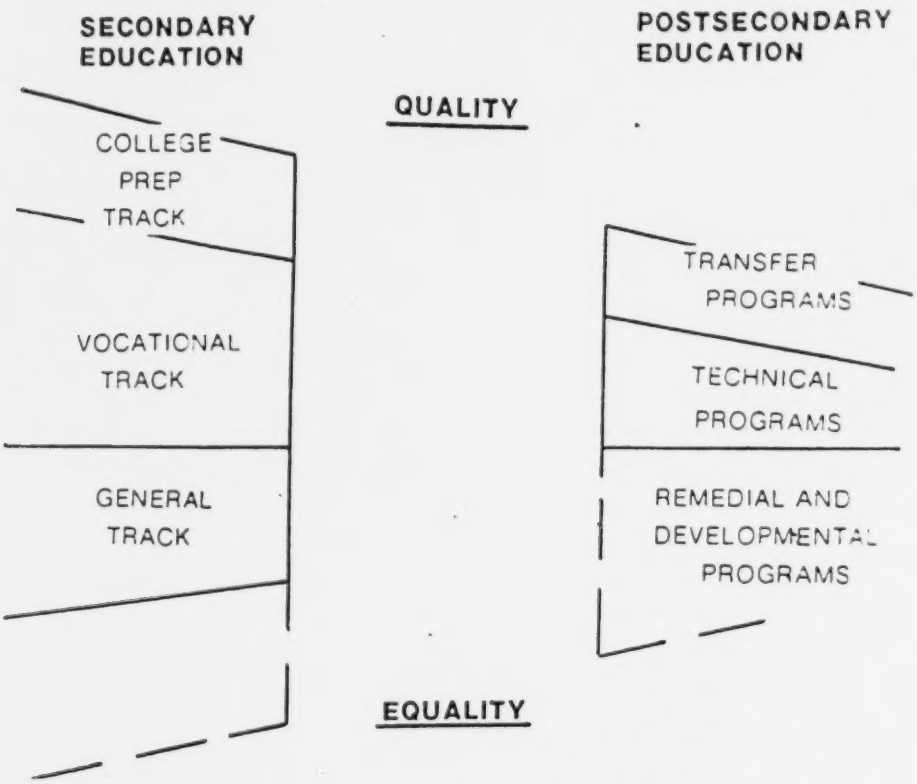
Basic education in America is based on the concepts of equality and quality. Each person is to be provided equal access to a high quality education at a reasonable cost. Access has been interpreted to mean student success including the entitlement to meaningful employment. Federal and state policy created by legislative process and judicial interpretations direct the flow of resources to help achieve both equality of opportunity and promotion of quality.

The elementary and secondary education system that has evolved consists of the academic, vocational-technical, and general tracks. Data collected for A National Longitudinal Study indicated that of 100 students in the contemporary traditional education pipeline, 76 graduated and 24 dropped out. Since the study in 1983, the drop out rate has increased to 29%. In some inner city areas, the drop out rate is 60 to 65%. Of those students who remain, most are cognitively disengaged from meaningful learning and gifted and talented are bored with contemporary traditional education (National Excellence, 1993). Of the 76 students who stayed in school and graduated, 34 graduated from the vocational track, 31 graduated from a general curriculum, and 11 graduated from the academic track. Data analyzed by a National Assessment for Educational Progress, indicated that only 18.1% of eighth-graders are proficient in math. For Pennsylvania, the figure is 19.1%. An international comparison indicated that U.S. students rank last or near last in all categories of math and science.

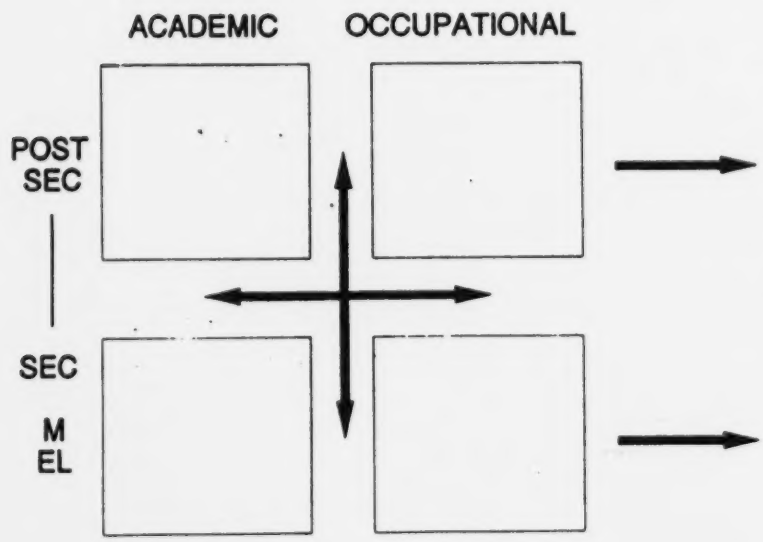
Although the analysis is focused on elementary and secondary education, a few comments on postsecondary education are important. Through the mid 1970s, the college prep track tended to be articulated between secondary and postsecondary education, but often the standards were low. Standards are being raised. In the late 1970s, a few two-year institutions began to articulate technical programs with vocational programs at secondary schools and upper division technical programs in senior colleges in 2+2+2 formats. Postsecondary institutions became more extensively involved in remedial and development education.

One essential issue is the synchronization of education with workplaces. Contemporary traditional formats tend to be discipline centered, layered by grade level, and provider controlled. The format assumes the content meets workplace needs. The format assumes a student can assimilate and retain sufficient knowledge and then apply it to solving problems in rapidly changing workplaces. Competencies and skills in America's workplaces are becoming increasingly more complex. Most jobs today require competency and skills that typically would be classified at a postsecondary level.

EQUALITY: DUAL MISSION PRIORITIES



EDUCATION WORKPLACES



Goals for Education and HRD Strategy

The Pennsylvania State Board of Education (SBE) adopted Twelve Goals for Quality Education in the 1960s. The Bucks County Intermediate Unit helped the Department of Education implement a Quality Education Program Study in 1967. Also, the state curriculum guides recommended that industrial arts programs include electricity, graphic arts, plastics, and other areas of study. In 1969 the Pennsylvania Department of Education recommended teaching industrial arts in three broad cluster areas -- Visual Communications, Industrial Materials, and Power Technology. State guidelines began to make reference to K-12 technology education in 1984.

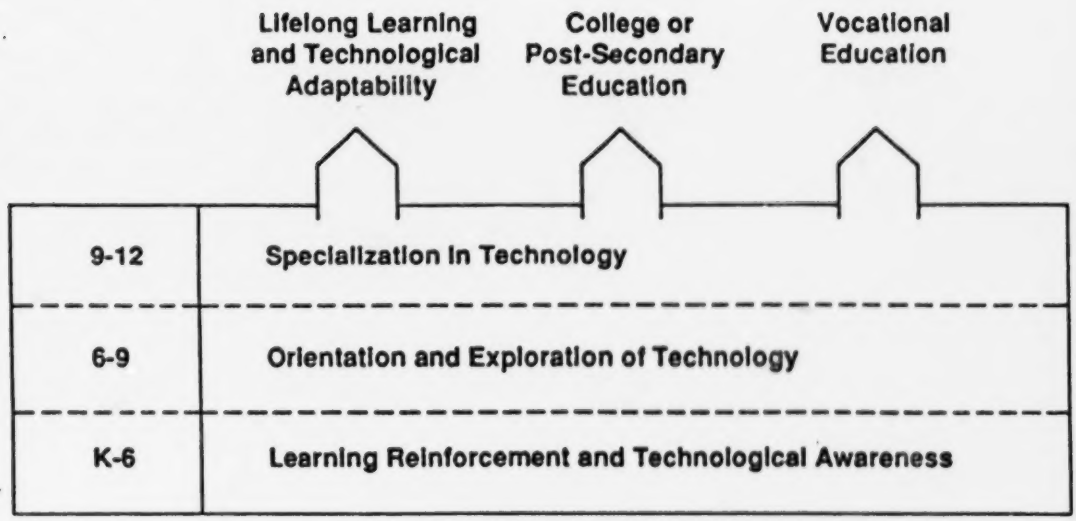
The President of the U.S. and the Governors held an Education Summit in 1989. Through action taken at the summit and later in Washington, six National Education Goals were set to be achieved by the year 2000. Pennsylvania adopted the America 2000 goals:

1. Readiness for School.
2. High School Completion.
3. Basic Subjects.
4. Science and Math.
5. Adult Literacy and Lifelong Learning.
6. Safe, Discipline, and Drug-Free Schools.

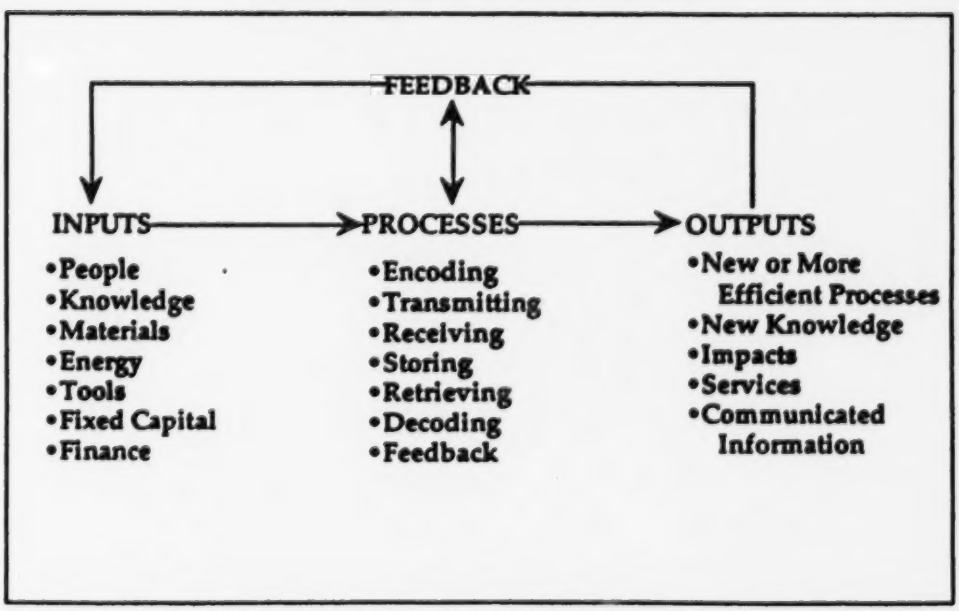
States adopting the goals are implementing processes for reporting on progress being made on achieving the goals.

SBE revised the curriculum regulations and approved 15 performance-based education goals. The six Common Core goals are self worth; information and thinking skills; learning independently and collaboratively; adaptability to change; ethical judgment; and honesty, responsibility, and tolerance. The nine Academic goals are communications, mathematics, science and technology, environment and ecology, citizenship, arts and humanities, career education and work, wellness and fitness, and home economics. SBE is requiring the 600 school boards to create strategic plans which specify how the school district will help students reach the performance-based goals. One-third of the school districts completed strategic plans in 1993-94. Phase II districts will complete strategic plans during 1994-95 and Phase III districts will complete plans during 1995-96.

In Pennsylvania, technology education encompasses the total school program, K-12. Students who go through an articulated technology education should be better prepared for lifelong learning and technological adaptability, college or postsecondary education, or vocational education. The focus in the K-6 years is on learning reinforcement and technological awareness. In grades 6-9, the focus is on orientation and exploration of technology. Specialization in technology occurs in grades 9-12 (see Attachment 5).



THE COMMUNICATION SYSTEM



Technology education in Pennsylvania is based on six systems: communications, transportation, construction, manufacturing, bio-related, and engineering. Inputs, processes, and outputs are specified for each of the five systems. School districts have flexibility to develop instructional materials to match the economy of which they are a part. For example, a school district could focus many learning activities on the bio-related and communications systems if the economy had a concentration in biotechnology.

A broad range of approaches is being taken to improve basic education. Some of the strategies have been evolving over the past decade and are now receiving federal support. For example, nine grants were awarded in Fiscal Year 1992 under the Demonstration Projects for the Integration of the Vocational and Academic Learning Program of the Carl D. Perkins Vocational and Applied Technology Education Act (Public Law 101-392). Some of these strategies were analyzed at a National Summit on Integration and Tech Prep (Asher and Flaxman, 1993). Other initiatives are included in the "Goals 2000: Education America Act" (P.L. 103-227) and the "School-To-Work Opportunities Act" (P.L. 103-239). "Goals 2000" adds 7th and 8th National Education Goals:

7. The nation's teaching force will have access to programs for the continued improvement of their professional skills and the opportunity to acquire the knowledge and skills needed to instruct and prepare all American students for the next century.

8. Every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children.

Pennsylvania prepares students in vocational-technical education (VTE) through 84 area vocational-technical schools (AVTS), 513 high schools, and 87 postsecondary institutions. VTE enrollments dropped from 216,910 in 1983-84 to 107,920 in 1991-92 and program completers dropped from 52,711 to 21,654 during the same time period. Program review will be a critical issue - equal access to high quality programs. Most of the AVTS will engage in strategic planning in Phase III during 1995-96. Strategic planning for SBE will occur in concert with requirements for above-named legislation.

Human resources development (HRD) process know-how technologies have been evolving over the past half century. The process know-how technologies include (a) performance-based education which is grounded in the "systems approach;" (b) strategic planning which evolved from several earlier techniques for planning, managing, and evaluating; and (c) benchmarking continuous quality improvement techniques that lead to world class standards. To this list can be added site-based management teams and self-directed work teams. Process technologies have science and art components.

VOCATIONAL-TECHNICAL EDUCATION SECONDARY PROGRAM ENROLLMENTS
BY SELECTED YEARS

	1983-84	1988-89	1991-92
Secondary	216 910	131 258	107 920
Agriculture Education	11 718	6 918	6 544
Business Education	56 198	26 276	15 747
Health Occupations Education	5 168	3 262	3 608
Marketing and Distributive Education	7 684	4 564	2 988
Occupational Home Economics Education	9 845	6 185	5 789
Trade and Industrial Education	64 511	45 604	40 791
Not Elsewhere Classified	11 088	5 519	1 954
Consumer and Homemaking Education	50 698	32 390	29 429
Technology Education	-	540	1 070

Note: 1. In 1987-88, the Pennsylvania Department of Education began approving programs in industrial arts education; in 1991 the name was changed to technology education.

2. A dash (-) indicates "not applicable."

Source: Division of Data Services

VOCATIONAL-TECHNICAL EDUCATION SECONDARY PROGRAM COMPLETERS
BY SELECTED YEARS

	1983-84	1988-89	1991-92
Total	52 711	30 199	21 654
Agriculture Education	2 616	1 581	1 146
Business Education	20 480	9 450	4 691
Health Occupations Education	1 812	1 092	1 139
Marketing and Distributive Education	2 901	1 484	938
Occupational Home Economics Education	2 682	1 498	1 406
Trade and Industrial Education	19 051	12 998	11 111
Not Elsewhere Classified	3 169	2 096	1 223

Source: Division of Data Services

A LAND GRANT COMMUNIVERSITY

Samuel Gould (1970) defined communiversity as "A loose federation of all educational and cultural resources which exist to serve the citizens, society and economy in a community or well defined region." James MacGregor Burns (1978) drew the distinction between transactional and transformational leadership. Transactional leadership occurs when individuals make contact for the purpose of the exchange of something. Transformational leadership involves mutual stimulation and elevation of attitudes, beliefs, and values to achieve improved quality of life.

A university is intended to assist the society of which it is a part through the development of (a) new knowledge and its application to solutions of societal problems of broad public interest and (b) a workforce to help shape and function well in the emerging era. As the U.S. evolved through the agricultural and industrial eras, land grant universities modernized their institutions and re-engineered undergraduate and graduate programs to be responsive to the workplace and workforce needs of each new era. "Learning Communities" is taking on a new meaning during the early technical era and the shift from an international economy for selected countries to a global economy with regional powerhouses. As the emerging global economy evolves, the land grant institutions must again re-engineer through a critical analysis of the variables of mission, programs, people, and technology and plant. Land grant institutions must lead the way in creating Info Era Learning Communities. Two examples are presented that relate to America 2000 Goal 1, Readiness to Learn, and Goal 4, Math and Science.

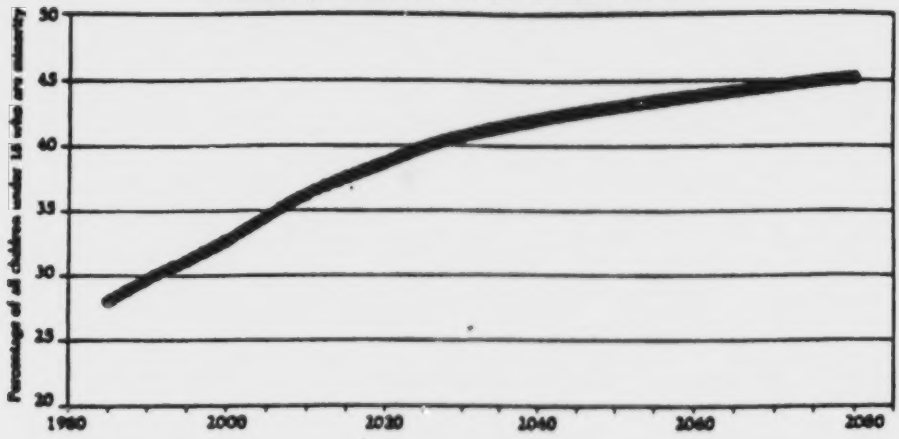
America 2000 Goal 1, Readiness to Learn

Code Blue

Data by the Children's Defense Fund (CDF) indicates that minority children will increase in large number over the next decades and that America's children are getting poorer while the nation gets richer (see Attachment 8). The U.S. ranked 22nd in the world in infant mortality among developed nations in 1989. CDF indicates that a black child is more than twice as likely as a white child to die in infancy, more than twice as likely to be born at low birthweight, more than three times as likely to be born to an unmarried mother, and nearly three times as likely to be poor (Progress and Peril, 1993)

Not too many years ago, the family, church, and neighborhood schools were societal units that were the bedrock of America. All of the above-mentioned units have undergone fundamental change. A mother is still the first bond to life but even that bridge has been altered

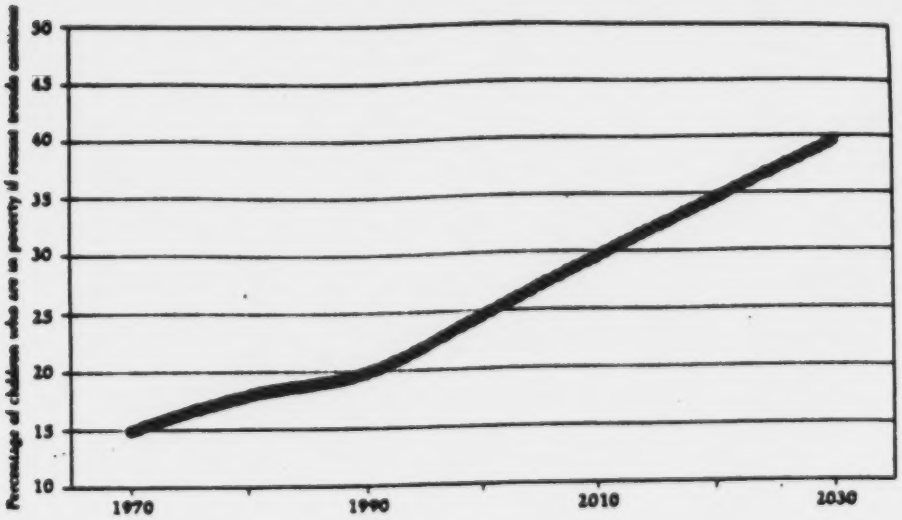
Minority Children in the United States



Year	1985	1990	1995	2000	2010	2020	2030	2050	2080
Percent	28.0%	29.7%	31.1%	32.7%	36.2%	38.7%	40.7%	43.0%	45.1%

Source: Based on Census Bureau projections.

America's Children Are Getting Poorer While the Nation Gets Richer



Year	1970	1980	1990	2000	2020	2030
Percent	14.9%	17.9%	19.8%	24.5%	34.5%	39.6%

• In the year 2000, if recent trends continue, there will be 16 million poor children in the United States, 3 million more than in 1987. One in every four children will be poor.

considerably in the past decades. The church is a second unit intended to cultivate beliefs, ethics, morals, and spiritual values. The church has undergone fundamental repositioning of its stand on many basic issues and sometimes even abandoned the inner city.

The neighborhood elementary school was a second or third home, an extended family beyond the care givers and service providers in the "block." Sometimes one or more teachers were neighbors, certainly familiar with the family. The "lessons" learned by block care givers and service providers were often a more positive influence and reached deeper than the messages by a parent or sibling. Brown vs Topeka, Kansas, led the U.S. to a strategy which destroyed the neighborhood school concept and cost more than money.

A three-year study by the Carnegie Corp. of New York indicates that

> Physically and emotionally healthy children, ready to learn and with good chances of becoming productive adults, don't turn into criminals, welfare recipients, school dropouts, unskilled labor unable or unwilling to find work, and the parents of illegitimate children who will repeat the doomed cycle" (Carnegie, 1994).

The Carnegie report ranked the United States last among industrialized nations in three categories: health care for children, subsidized child care, and family leaves for parents with young children. Lisbeth Schorr, a lecturer in social medicine at Harvard University stated

> It is remarkable how much unchallenged knowledge about the importance of the early years the welfare reformers, federal and state, are managing to ignore.... The scientific evidence documenting the early roots of crime and violence is overwhelming.... Society pays dearly when the fundamental building blocks of health development are not in place during the infant and toddler years" (Neglected Kids, 1994).

Nationally, less than 60% of all children were fully vaccinated at age 2 in 1992 (Powers, 1993)

Overreaching Purpose and Vision

What is the overreaching purpose that will shape an action plan on readiness to learn? What beliefs and values are reflected in the ideas to be included in the policy statement? Following approval by the Bucks County Schools Intermediate Unit Board of Directors (Doylestown, PA) in November 1989, a thirty member strategic planning committee was created that specified a set of fundamental beliefs (Planning). Some of the ideas in this set of beliefs provide an excellent framework for a vision and purpose statement on readiness to learn (see Attachment 9).

Beliefs

- We believe that each individual possesses absolute intrinsic worth.
- We believe that individuals have the fundamental right to be different.
- We believe that each person has the power and responsibility to govern his/her life.
- We believe that every component of society has an obligation to provide for the welfare of children.
- We believe that the principles of democracy embodied in the Constitution and Bill of Rights provide the best opportunity for the exercise of personal freedom.
- We believe that all people have a right to a public education.
- We believe that people create their own success and fulfillment by generating and exercising choice.
- We believe that communication is essential to mutual understanding.
- We believe that all people are responsible to and for each other.
- We believe that people have the right to unrestricted opportunity to develop their talents and abilities.
- We believe that all people can learn and the limits of individual learning are unknown.
- We believe that risk taking increases the potential for growth and excellence.
- We believe that all life has sanctity and is interdependent.

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Readiness Goal and Objectives

America 2000, Goal 1, states "By the year 2000, all children in America will start school ready to learn." Objectives for "ready to learn" are as follows:
(a) All disadvantaged and disabled children will have access to high quality and developmentally appropriate **preschool programs** that help prepare children for school.
(b) Every parent in America will be a **child's first teacher** and devote time each day helping his or her preschool child learn; parents will have access to training and support they need.
(c) Children will receive the **nutrition and health care** needed to arrive at school with healthy minds and bodies, and the number of low birthweight babies will be significantly reduced through enhanced prenatal health systems.

The National Education Goals Panel has indicated that "readiness to learn" includes (a) physical well-being and motor development, (b) social and emotional development, (c) approaches toward learning, and (d) general knowledge.

A Plan to IMPACT on REAL Problems

A plan to **IMPACT** on the **REAL** problems must include a comprehensive assessment of health status of culturally diverse individuals and an audit of the current services being provided and the existing infrastructure. A vision can then be created and co-created followed by a multi-year action plan with goals and objectives, methodology, and resources. Some of the activities could be as follows:
(a) **Assess the health status** of culturally diverse people of all ages with particular focus on infants and children.
(b) **Assess health and social service establishments** with particular emphasis on function based on federal and state regulations, human resources, and technological resources.
(c) **Audit programs** intended to produce human resources to attain and maintain competencies to IMPACT on problems.
(d) Create and co-create a **vision** and a preferred scenario and **multi-year action plan** with quality of life benchmarks.

How would a Learning Community develop an overreaching purpose through a set of shared beliefs and values about healthy people to help them become "ready to learn?" How would a set of beliefs and values be transformed into an action plan for restructuring establishments and creating entirely new ones that would nurture positive development based on "Information about Effective Establishments?" Each goal and objective, perhaps each activity and task, will have organizational development and human resources development dimensions. A conceptual framework for six America 2000 goals and the "Readiness for School Preschool Programs" objective is presented in Attachment 10.

LEARNING COMMUNITIES GOAL CATEGORIES

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
READINESS TO LEARN					
STUDENT SUCCESS RETENTION					
BASIC CORE COMPETENCIES					
MATH SCIENCE TECHNOLOGY					
LIFELONG LEARNING COMPETENCIES					
SAFE LEARNING COMMUNITIES					

MULTI-YEAR PLAN

Goal 1 - Readiness For School

Objective 1 - Preschool programs

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5

Partnership Between Community and Communiversity

A university exists primarily because it grants degrees and attracts support for the function of instruction. As it expanded the instructional function, a university was able to include research and service functions. A communiversity committed to continuous quality improvement could use its know-how and technology for three processes of (a) analysis, (b) vision co-creation, and (c) action plan development.

Analysis

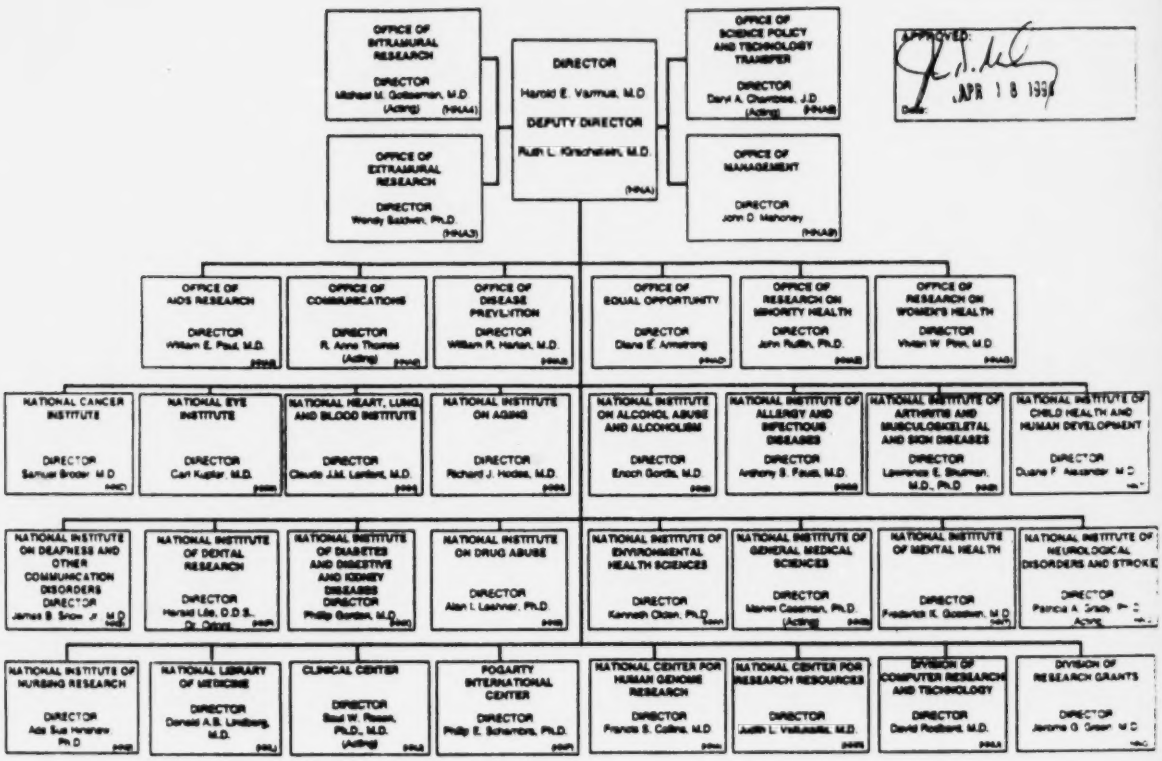
A school district may have adequate data about its internal environment. A community or group of communities within a school district may have adequate data about the service area with the assistance of the Intermediate Unit and county, state, and national offices. Data must be interpreted in terms of context, infrastructure, and policy.

Down through the years, policy has been recommended by special interest groups or mandated by the judicial system and implemented by federal and state governments. This approach operates on the basis of chopping people up into their component problems and creating a bureaucratic stream for distributing resources for each component (Raspberry). These bureaucracies all too often become ineffectual and only marginally interrelated. A youth-in-crisis or her/his parents are expected to negotiate the maze of agencies, programs, and eligible rules in order to get help. Even providers don't know all of them. Veronica Coleman stated, "Infant mortality, childhood poverty, births to young unwed mothers, and juvenile crime statistics all suggest the nation cares little about its rising generation." Paul Adams, indicated, "The fact that the United States ranks 22nd in infant mortality suggests neglect." The problems may get worse due to substance abuse (Children's Monitor, 1991) and drug-resistant bacteria (Toner, 1992).

One **OUTCOME** of the analysis should be a clear and concise portrayal of the **REAL**, including the probable future if trend lines continue. This is part of the "science" of strategic planning. Participants may interpret the data differently based on culture and experience.

Data, information, models, and strategies that make a positive impact are available at national, state, and local levels. At the national level, sources include the U.S. Departments of Agriculture, Education, Health and Human Services; National Institutes for Health and for Mental Health; Center for Disease Control; Children's Defense Fund; Child Welfare League of America; and many national organizations (see Attachment 11). A learning community will engage in higher levels of contextual analysis to achieve continuous quality improvements.

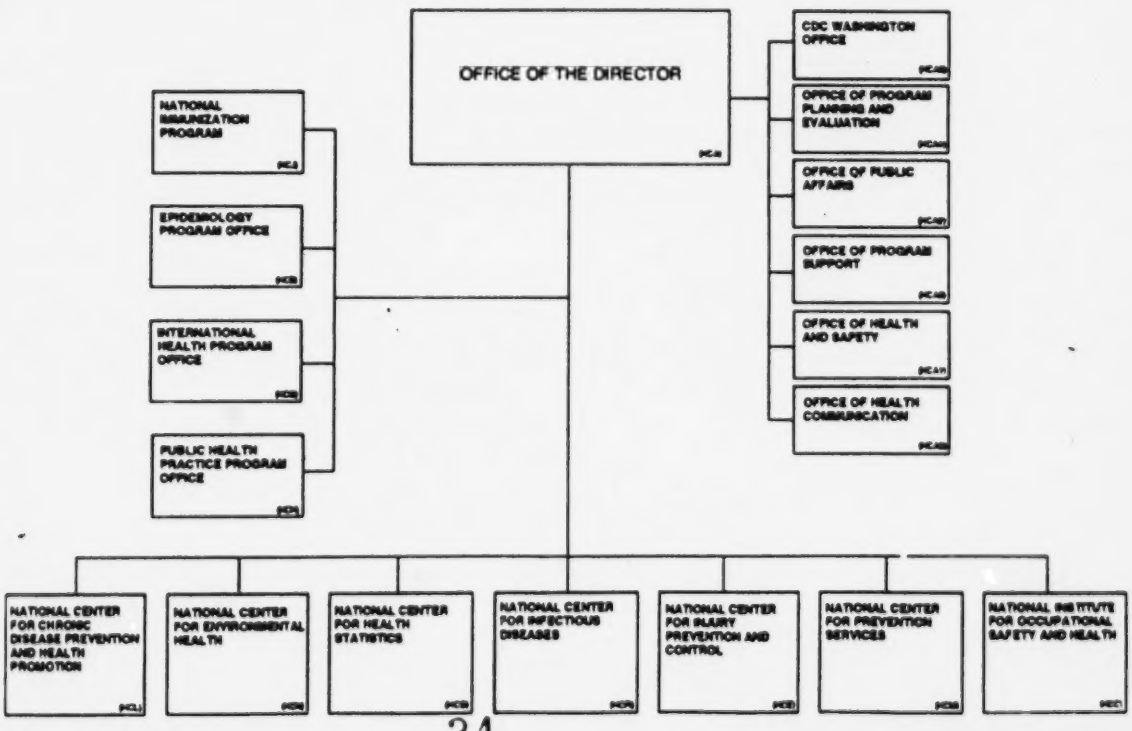
DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Institutes of Health



DEPARTMENT OF HEALTH AND HUMAN SERVICES

PUBLIC HEALTH SERVICE

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)


OFFICE OF THE DIRECTOR
CDC WASHINGTON OFFICE
OFFICE OF PROGRAM PLANNING AND EVALUATION
OFFICE OF PUBLIC AFFAIRS
OFFICE OF PROGRAM SUPPORT
OFFICE OF HEALTH AND SAFETY
OFFICE OF HEALTH COMMUNICATION
NATIONAL IMMUNIZATION PROGRAM
EPIDEMIOLOGY PROGRAM OFFICE
INTERNATIONAL HEALTH PROGRAM OFFICE
PUBLIC HEALTH PRACTICE PROGRAM OFFICE
NATIONAL CENTER FOR CHRONIC DISEASE PREVENTION AND HEALTH PROMOTION
NATIONAL CENTER FOR ENVIRONMENTAL HEALTH
NATIONAL CENTER FOR HEALTH STATISTICS
NATIONAL CENTER FOR INFECTIOUS DISEASES
NATIONAL CENTER FOR INJURY PREVENTION AND CONTROL
NATIONAL CENTER FOR PREVENTION SERVICES
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

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Visioning

Visioning provides an opportunity to dream about the IDEAL. Visioning would include all the elements of "readiness to learn." What should an infant be entitled to in a country with abundant resources and how should policies be written and the infrastructure be realigned to provide for better access to quality services. Attachment 12 is a conceptual framework of the components of a comprehensive early childhood wellness program (McDaniel, 1993).

Visioning and scenario development have evolved over the past several decades. During the 1960s and 1970s most of whatever energy was devoted to strategic planning assumed the continuation of contemporary traditional education as the dominant means of human resources development. Visions were based on a number of internal and external demographic, social, economic, technological and governmental planning variables and scenarios that were developed could be classified as (a) expansion, (b) steady state, or (c) contraction based on the mix of above-mentioned variables.

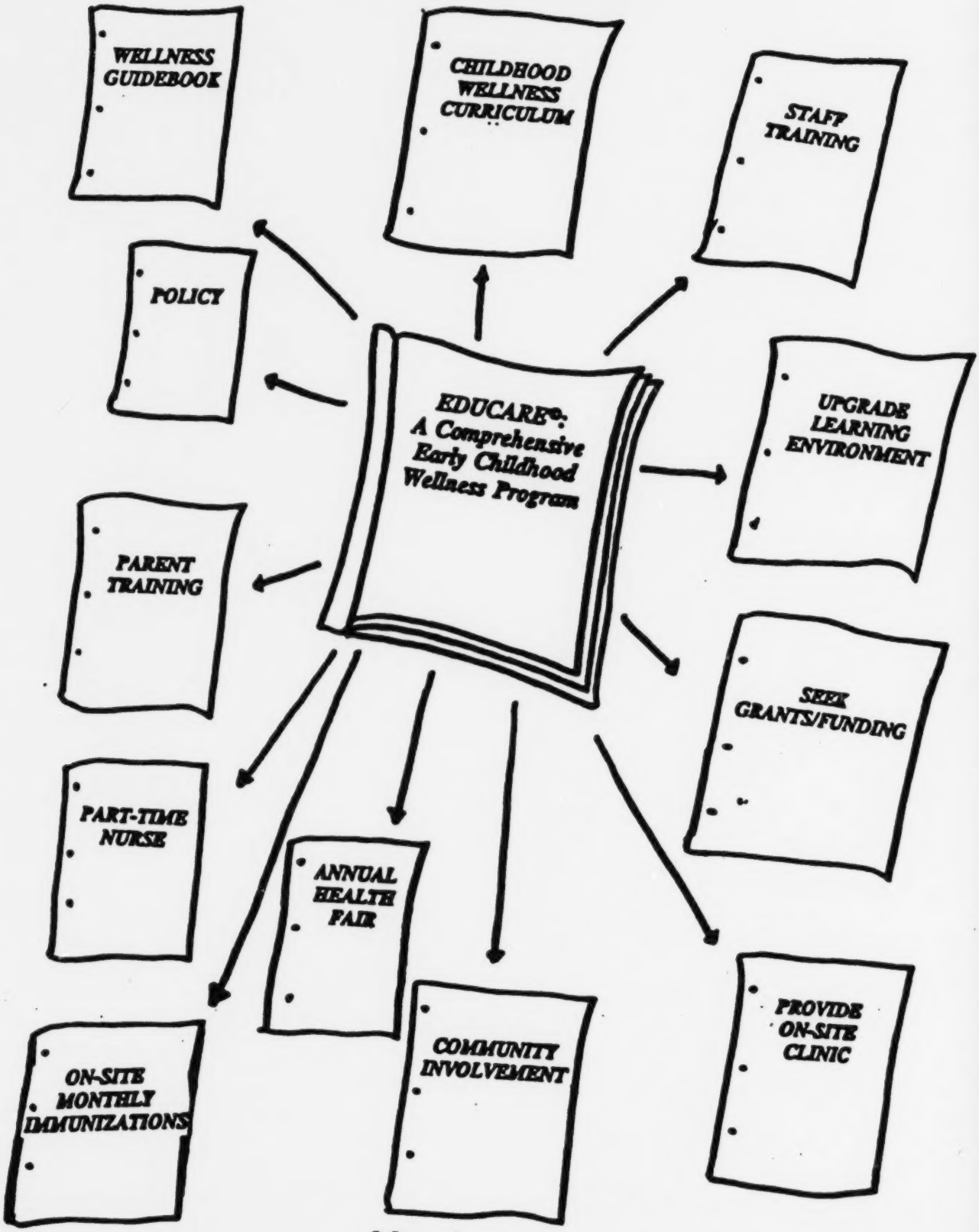
Advances in communication and information technologies made it possible to envision entirely new learning delivery systems in the 1980s. Technology intensive delivery systems were described in Any Home A Classroom (Halperin, 1984) and The Education Utility (Gooler, 1986). Thus, scenario classifications in the mid 1980s shifted to (a) contemporary traditional, (b) partial technological, and (c) technology intensive. 21st Century Learning and Health Care in the Home (1992) represents a technology delivery systems like that which is being developed through the Community Learning and Information Network (see Attachments 13 and 14).

Action Plan Development and Implementation

The **REAL** compared against the **IDEAL** provides a framework for the multi-year action plan which contains HRD components including proficiency with technology. The focus of the action plan would be on improved quality of life (QOL) for infants and young children through "full service" caring and learning environments. One "means" to achieve improved QOL goals would be HRD through technology.

Each school district can decide the process that will be used for strategic planning. The process can be customized based on research and experience or it can be prepackaged. A customized strategic planning process tends to correlate more positively to human resources development in that the community of learners play a more active role in shaping the "plan to plan" and the multi-year strategic plan. Formatting the outcomes to be achieved over the timeframe of the plan is one item to be decided during the plan to plan phase. It is logical to format the action plan

COMPONENTS OF A COMPREHENSIVE EARLY CHILDHOOD WELLNESS PROGRAM



21ST CENTURY LEARNING AND HEALTH CARE IN THE HOME:

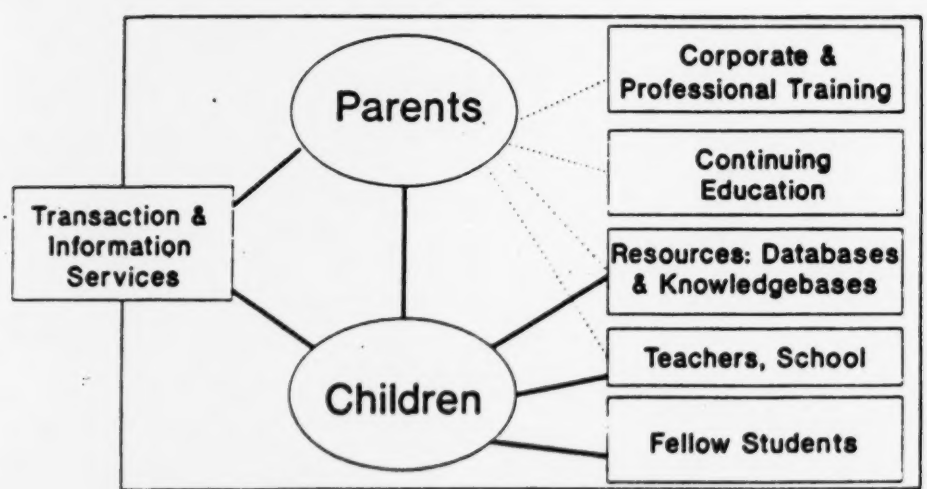
CREATING A NATIONAL TELECOMMUNICATIONS NETWORK

108 North Alfred Street
Alexandria, VA 22314
(703) 684-5880

1631 Suter's Lane N
Washington, DC 200
(202) 333-60

POTENTIAL ELECTRONIC FAMILY LEARNING ENVIRONMENT

FIGURE 1



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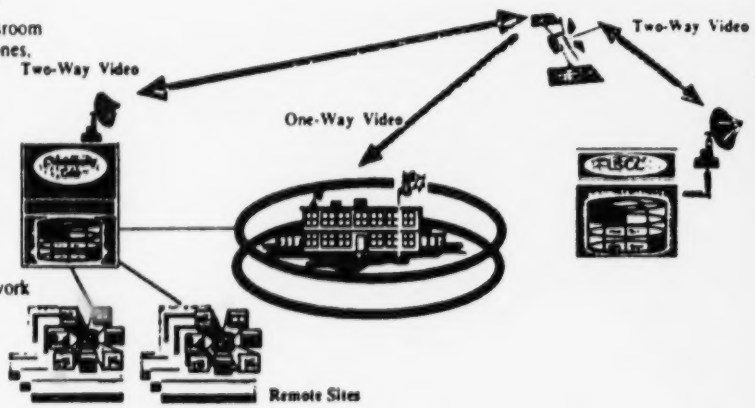
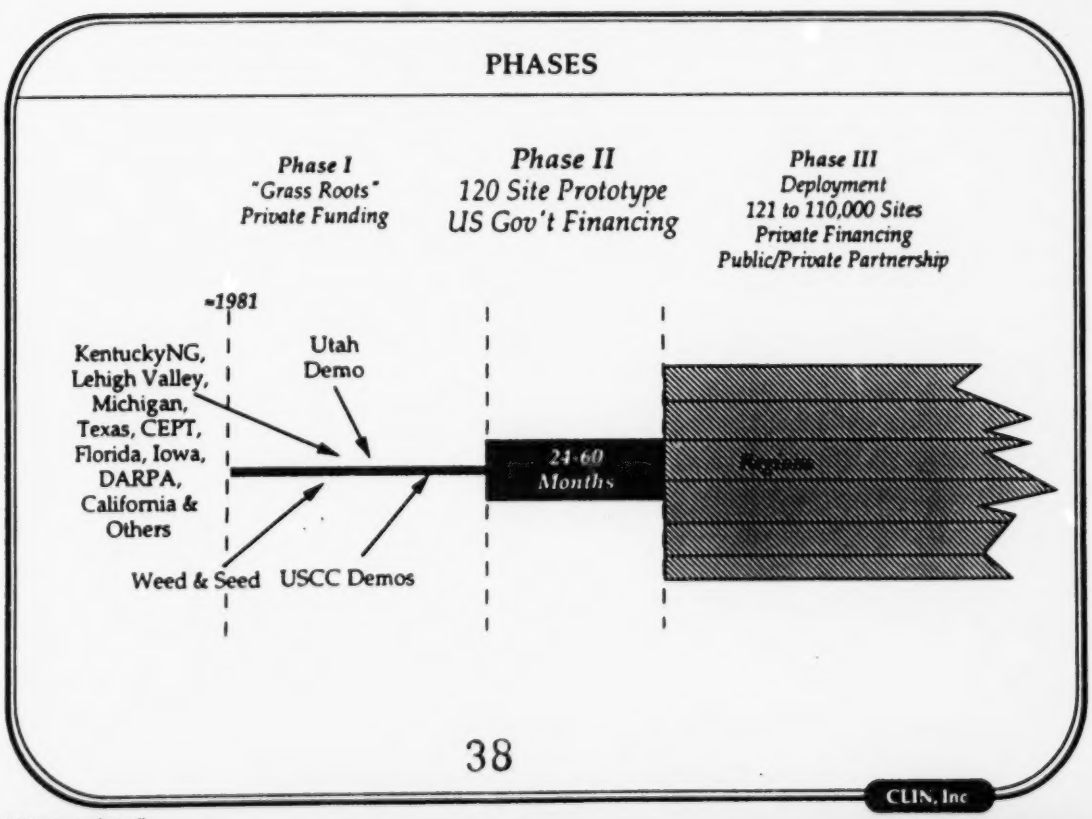
The Composition of a Prototype Community Learning and Information Network Site

The first 120 sites selected for implementation will require hardware and necessary adjustments to existing facilities to be fully operational.

Each site will be initially equipped with:

- A fully two-way interactive video classroom for 25 participants (monitors, microphones, camera, etc.)
- Video satellite antenna
- A data storage and retrieval computer
- 2 teacher's computer workstations
- 25 multimedia desktop computers
- Training
- Maintenance etc
- Power / phone line installation & site work





using the America 2000 goal categories. Improved OOL benchmarked outcomes would be specified for each category of goals/objectives. Readiness for School Preschool Programs could have any number of outcomes to be accomplished over the period of the action plan. Many of the activities and tasks to be accomplished will require "just-in-time" human resources development collaborative learning experiences which could be delivered in an online "practicum" format.

Assume the first outcome is to assess the health status of culturally diverse people of all ages with particular focus on infants and children. The action plan would contain specific tasks to be accomplished by the community and its schools relative to (a) physical well-being and motor development, (b) social and emotional development, (c) approaches toward learning, and (d) general knowledge. What would be the benchmarks each year of the multi-year plan? Continuous quality improvement (CQI) is guided by benchmark outcomes which have been collaboratively established by a broad range of stakeholders representing family, church, health care providers, and all levels of education. An example of benchmarks in Oregon is on Attachment 14. What technology can be used to meet the benchmarks? What HRD competencies/skills will be required to do the tasks?

Not too many years ago, people in Telford, PA, were primarily from German ancestry. A great deal of the culture was shaped by the conservative fundamental Mennonite and Lutheran and Reformed Protestant sects. Hispanics began to reshape the culture of the area and more recently Vietnam's culture began to reshape the infrastructure. Specific tasks could include raising the level of understanding of diverse cultures, East and West. Hispanics represent many cultures even though they speak various dialects of Spanish, just like there are various dialects of Pennsylvania German. What are the specific tasks to be accomplished relative to cultural awareness? What HRD competencies and skills will care givers and service providers need?

Preparation must be made to restructure all service sector establishments, particularly the units intended to improve the quality of life of infants and young children. New technologies used by the military to wage war and the private sector to compete in the new global economy must be used to improve the quality of life. Several postsecondary institutions are building technology bridges to K-12 schools and supportive private and public agencies (Ricart). Metropolitan area "freenets" and other civic information networks can explain how state and local government services work and offer advice columns and discussion lists (see Attachment 15).

Children and families. A remarkable consensus has emerged in Oregon on the importance of addressing the needs of children and families. Education is part of the need, but there is much more. Family stability, prenatal care, early childhood health, child care, and early development are recognized as a critically important foundation to Oregon's goals for its people.

	1970	1980	1990	1992	1995	2000	2010
Early Childhood Development. Percentage of children entering kindergarten meeting specific development standards for their age							
a. Cognitive development							
b. Language and literacy development							
c. Physical well being							
d. Social/emotional development							
Percentage of children that kindergarten teachers feel are ready to succeed in school				68%	80%	95%	99%
Teen Pregnancy. Pregnancy rate per 1,000 females ages 10-17		24.7	19.6	19.3	9.8	8.0	8.0
a. African-Americans			48.7				8.0
b. American Indians			25.0				8.0
c. Asians			9.6				8.0
d. Hispanics			23.6				8.0
e. Whites			17.5				8.0
Drug-Free Babies. Percentage of infants whose mothers did not use:							
a. illicit drugs during pregnancy			89%		95%	99%	100%
b. alcohol during pregnancy (self-reported)			93%	95%	97%	99%	100%
c. tobacco during pregnancy (self-reported)			76%	79%	90%	95%	100%

Drug-Free Teens: Percentage of teens:							
a. Free from involvement with alcohol in the previous month 1. Eighth graders 2. Eleventh graders			77% 56%	74% 63%	92% 75%	98% 85%	99% 90%
b. Free from involvement with illicit drugs in the previous month 1. Eighth graders 2. Eleventh graders			86% 77%	89% 80%	95% 85%	99% 98%	99% 99%
c. Free from involvement with tobacco in the previous month 1. Eighth graders 2. Eleventh graders			87% 77%	85% 81%	95% 85%	95% 95%	99% 99%
Safe Child Care: Percentage of child care facilities which meet established basic standards			20%	23%	90%	100%	100%

Education and work force preparation reforms. Oregon has begun to put in place one of the most far-reaching education reform programs in the nation, with the explicit mission, expressed in *Oregon Shines*, of achieving measurably the best educated work force in the nation by the year 2000, and one equal to any in the world by 2010. Our goal is to develop a population with increasing percentages of highly educated, literate citizens who are capable of adapting to the challenges of a rapidly changing global economy. It is imperative that we implement the education reforms adopted by the Legislature and concentrate on raising standards for education at every level.

	1970	1980	1990	1992	1995	2000	2010
Educational Skill Levels Percentage of students who achieve established skill levels							
Fifth Grade							
a. Composite Reading and Math Skills				75%			99%
1. African-American				58%			99%
2. American Indian				57%			99%
3. Asian				73%			99%
4. Hispanic				53%			99%

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YOUNGSTOWN FREENET MAIN MENU

1 Administration
2 Post Office
3 The Public Square
4 The Communications Center
5 The Animal Hospital
6 The Business & Industrial Park
7 The Computer Center
8 The Courthouse
9 The Government Center
10 The Hospital
11 The House of Worship
12 The Human Services Building
13 The Teleport
14 The USA/Today Headline News
15 Youngstown State University
16 Academy One

h=Help, x=Exit YFN, "go help"=extended help
Your Choice ==>

CASE WESTERN RESERVE UNIVERSITY
COMMUNITY TELECOMPUTING LABORATORY

CLEVELAND FREE-NET DIRECTORY

1 The Administration Building
2 The Post Office
3 Public Square
4 The Courthouse & Government Center
5 The Arts Building
6 Science and Technology Center
7 The Medical Arts Building
8 The Schoolhouse (Academy One)
9 The Community Center & Recreation Area
10 The Business and Industrial Park
11 The Library
12 University Circle
13 The Teleport
14 The Communications Center
15 NPTN/USA TODAY HEADLINE NEWS
16 SPECIAL FEATURES

America 2000, Goal 4, Math and Science

Analysis

U.S. pre-eminence was attributable, to a great extent, to investment in Research and Development and HRD to produce the critical mass of intellectual capital -- mathematicians, scientists, and engineers. When the Sputniks were launched in 1957, the U.S. began to analyze the disciplines of math and science and design new content and process formats to retool the way the subjects were taught.

The curriculum that has evolved in industrial era schools and colleges is discipline/subject centered: English, history or social sciences, mathematics, natural sciences, foreign languages, etc. Professional associations and other groups undertake projects to assemble the content and process for each discipline or subject. States and local education agencies set policy and make decisions about the mosaic of regulations and rules that determine what constitutes the curriculum and sometimes how it will be delivered and when it will be presented.

The National Assessment of Educational Progress provides data about student proficiency scores in mathematics and science, as well as other subjects (NAEP). In only four states do 25% or more of the 8th grade students achieve minimum math proficiency: North Dakota, Iowa, Nebraska, and Minnesota. Pennsylvania placed 12th with 19.1% (21.8% for whites, 3.5% for blacks, and 2.5% for Hispanics). New Jersey placed 7th with 22.8% (28.6% for whites, 3.2% for blacks, and 4.5% for Hispanics). Only 36 states and the District of Columbia participated in the assessment. In science, four of five students take some form of biology. Less than 1/3 of the biology students, 26, take some form of chemistry and 1/2 of them, 13, take some form of physics.

During the modernization era, horizontal integration and vertical articulation began to emerge at the secondary vocational and postsecondary technical levels. Horizontal integration took on many forms including basic competencies integrated into vocational curriculum and taught by vocational teachers. At the postsecondary level, math and physics were sometimes taught by engineers to insure application of the disciplines to engineering problem solving. School teachers worked with postsecondary faculty to develop 3+2+2 articulation agreements that would guarantee student passage through three layers of the educational pipeline. Developing A CUrriculuM (DACUM) is an elaboration of the critical incident technique which uses expert workers and supervisors to communicate information about the attitudes, knowledge, and skills a person would need to work in a specific occupation.

Integration and articulation picked up momentum in the 1980s with the need to produce a competitive workforce with higher competency and skill levels. The Southern Regional Education Board published Goals for Education: Challenge 2000 (1988) and formed a consortium for Improving General And Vocational Education In The High School (Bottoms and Presson, 1989) to focus on mathematics, science, and communications skills. Curriculum was strengthened for manufacturing trades, health and related fields, and a few other areas by upgrading subjects and adding a technology course. Grubb, Davis, Lum, Plihal, and Morgaine at the National Center for Research in Vocational Education (NCRVE) listed several patterns in The Cunning Hand, The Cultured Mind: Models For Integrating Vocational And Academic Education (1990):

1. Incorporating academic competencies into vocational courses.
2. Combining academic and vocational teachers to incorporate academic competencies into vocational courses.
3. Making the academic curriculum more vocationally relevant.
4. Modifying both academic and vocational education through curricula "alignment."
5. The Academy model: schools within schools that focus on a field -- health, electronics, business.
6. Replacing conventional departments with occupational clusters.
7. Single occupational high schools - magnet optional schools.
8. Maintain conventional academic and vocational departments, but organized to have career paths or occupational majors.

The Carl D. Perkins Vocational and Applied Technology Education Act as amended by P.L. 101-392 has provided new impetus for horizontal integration and vertical articulation with a focus on alternative education. The Perkins Act provides support for tech-prep, particularly replication for established programs. Tech-prep has been emerging in business and manufacturing areas and is growing in the health occupations. Project ProTech by the Boston Private Industry Council is developing partnerships with health care providers. The Perkins Act also mandates a National Assessment of Vocational Education report for Congress.

Accountability initiatives such as program review and warranty are being implemented. Program review is an examination of information such as centrality to mission, quality, market viability or demand, and cost. A major applied research project on program review in 1991 indicated that thirteen of twenty-one states has some form of program review for two-year colleges (Satterlee, 1991). Guarantees and warranty programs are being implemented by secondary and postsecondary institutions for various tracks.

Vision

Math, science, and technology have become increasingly more important in the past two decades and will be even more essential in the advanced technical era of the 21st Century. A priority issue is how to prepare the critical mass of High Performance Learner Workers with appropriate competency and skills for the workplaces of the future. Learning to learn is the critical know-how competency if we are to create a preferred future as opposed to merely adjusting to circumstances. During this early period of social and economic restructuring, it is important to raise our level of awareness and understanding of (a) advances in science and technology and their impact on workplaces and workforces and (b) alternative ways of formatting learning experiences that could yield High Performance Learners Workers (HPLW).

Many advances in science and technology must be analyzed to attempt to understand what life and work could be like in the 21st Century. Miniaturization of electronics drives many of these advances. Consider advances in computer chip production and the millions of instructions per second that are now and will be performed by the end of this decade (see Attachment 16). Consider the following technological advances and their impact on workplaces:

In 1955, it was hand set type and the platen press.

In 1981, it was the PC.

In 1985, it was desktop publishing.

In 1989, it was voice activated technology and desktop presentations with sophisticated graphics.

In 1993, it was voice activated typewriters and electronic books.

In 1994, it is multilingual continuous voice activated desktop videoconferencing which minimizes geographic, language, physical and temporal restrictions.

In 1995, it will be asynchronous transfer mode (ATM) technology with continuous voice activated software on a PC using cellular communications technology to access databases through local area and wide area networks.

Voice processing industries are perfecting inexpensive speech recognition remote control applications. Verbex Voice Systems, Inc., Edison, NJ, announced in January 1993 that Hill-Rom Company has developed a system using Verbex technology for controlling hospital room functions by voice. ENHANCEMATE provides functional control over a wide range of hospital room utilities. The head and knee sections of the bed can be raised and lowered. The Dynamic Sleep Surface of Hill-Rom's bed can be adjusted to the patient's comfort level from soft to firm. Reading lights can be turned on and off. The TV can be turned on and off and channels can be changed. Phone calls can be placed via voice through the unit's built-in-speaker phone. Hill-Rom Company is a

COMPUTER CHIPS

DATE	CHIP	TRANSISTORS	MIPS (Million Instructions Per Second)
1971		2,300	
1974		6,000	
1978		29,000	
1982	286	130,000	
1985	386	275,000	
1989	486	1,200,000	40
1993	586	3,000,000	100
	686		
	786		
	886		

ADVANCES IN TECHNOLOGY

In 1955, it was hand set type and the platen press.

In 1981, it was the PC.

In 1985, it was desktop publishing.

In 1989, it was voice activated technology and desktop presentations with sophisticated graphics.

In 1993, it was voice activated typewriters and electronic books.

In 1994, it is multilingual continuous voice activated desktop videoconferencing which minimizes geographic, language, physical and temporal restrictions.

In 1995, it will be asynchronous transfer mode (ATM) technology with continuous voice activated software on a PC using cellular communications technology to access **databases** through local area **networks** (LANs) and then to wide area networks

wholly-owned subsidiary of Hillenbrand Industries and a $1.2 billion diversified international conglomerate.

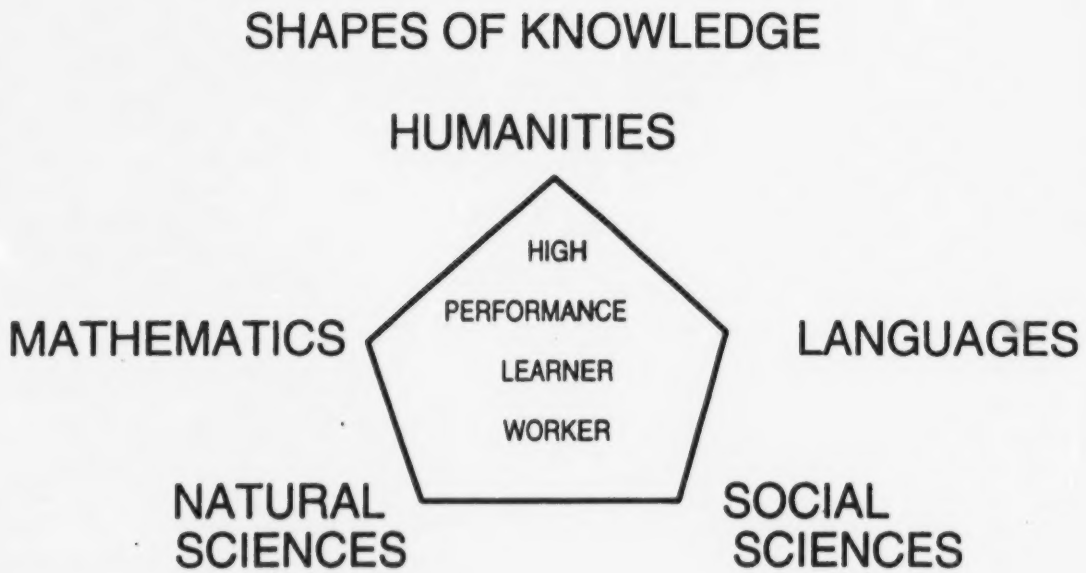
Other technological advances are equally important. Franklin Publishing, Inc., in Mt Holly, NJ, is the leading electronic book publisher. On January 3, 1993, Franklin Publishing announced the world's first personal digital assistant (PDA) -- the powerful Digital Book System (DBS-1). Each Digital Book has a capacity to store the equivalent of 10 Bibles through Franklin's data compression technology. The 4.6 ounce DBS-1 measures 3" x 5" x 1/2" and will operate up to one year of normal use on lithium batteries. Dictionary Plus dictionary and thesaurus contains over 300,000 definitions and 500,000 synonyms as well as core meanings and antonyms. The Language Master makes language more accessible for people who are blind, visually impaired, learning disabled, or speech impaired. Franklin is the world's largest publisher of electronic books, having sold more than six million books including English and bilingual dictionaries, Bibles, encyclopedias, entertainment, and educational and tutorial publications. Franklin's books are sold in 67 countries. More than 50 new titles were available in 1993 on subjects such as education, nutrition, health, cooking, nursing, foreign languages, business, travel, and investment. To industry watchers, the DBS represents an entirely new chapter in the publishing field that could change all reference books of the future.

The extrapolation of historical and contemporary information yields insights about what trends could occur. This first stage analysis is necessary, but insufficient. Beyond envisioning the dynamic impact of advances in science and technology on workplaces and workforces, the insights must be transformed into implications for human resources performance in an advanced technical era and broad stroke guidelines for curriculum formats for lifelong learning and the relation of disciplines to producing the knowledge workers of the 21st Century (see Attachment 17). Learning to learn exercises must be included to give participants the competencies and skills to invent curriculum formats that research indicates are likely to be qualitatively superior to today's contemporary traditional education formats. Advances in technology that are transferred into workplaces must become part of the student learning outcomes which are included in the curriculum to yield competent workforces.

Advances in communication and information technologies will accelerate with multilingual voice activated devices and videoconferencing. These new technologies provide an opportunity to envision entirely new conceptual frameworks for learning delivered just-in-time into the home, workplace and community at the convenience of the consumer.

A Vision of IBM Human Resources
Performance in the year 2000

NOW	The Year 2000
Plan by jobs	Plan by skill
Courses	Instruction modules
Traditional ISD	Automated development
Explicit evaluation	Embedded measurement
Culture dependent	Automatic translation
Limited media	Multisensory
Local catalogs	Worldwide libraries
Centralized	Distributed
Management-initiated	Employee-initiated



Change, March/April 1994, Vol.36, No.2, pp. 27-30

Action Plan

The U.S. must find better ways of developing human resources in math, science, and technology to be competitive in the 21st Century. America 2000 Goal 4 provides a conceptual framework for a multi-year action plan for math and science. America 2000 Goal 4 has three objectives:
1. Math and science will be strengthened throughout the system, especially in the early grades.
2. The number of teachers with a substantive background in mathematics and science will increase by 50 percent.
3. The number of U.S. undergraduate and graduate students, especially women and minorities, who complete degrees in math, science, and engineering will increase significantly.

School districts will create strategic plans over the next three years. The districts can decide to undertake projects unilaterally or in collaboration with other districts or organizations. Most truly significant projects will require collaborative partnerships of private and public sector establishments. One comprehensive example is The Lehigh Valley Business-Education Partnership (1991).

Areas of collaboration are numerous. First, local school districts participate in Area Vocational-Technical Schools which offer an array of programs in a variety of different formats which range from essentially school-based to work-based. North Montco AVTS is preparing for strategic planning in Phase III at the same time as North Penn, Souderton, Methaction, Wissahickon, and Perkiomen Valley. North Montco Programs include Health and Human Services Technology and Engineering Technology which are in a Tech Prep format with participating schools and with Penn State Ogontz and Montgomery County Community College. North Montco also has a Visual Communications Technology program.

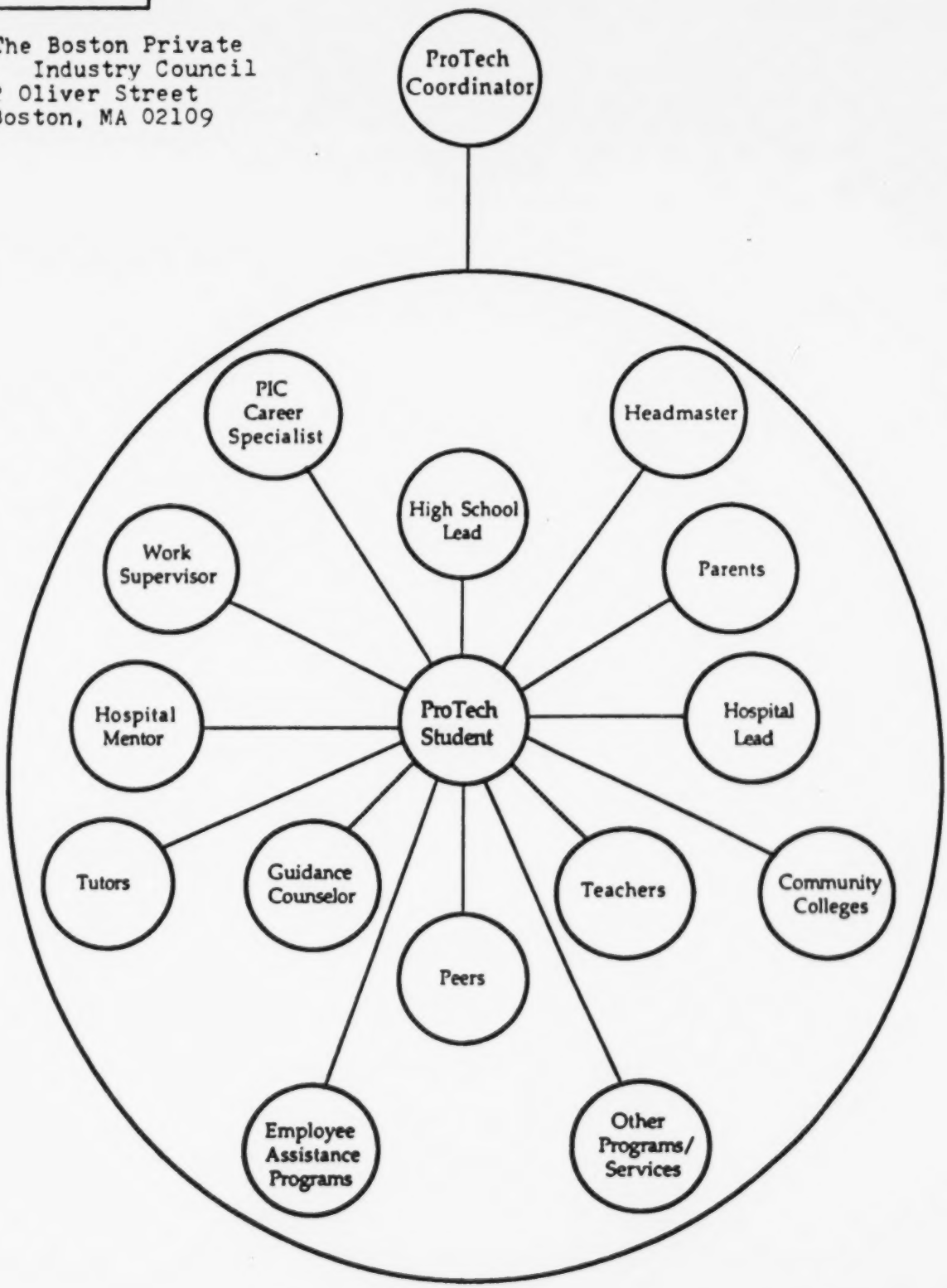
One multi-year goal could consist of an analysis of competencies and skills that should be included in the curriculum of each of these programs. Determining the right competencies and skills could include an analysis of the "Futuring" project by the New York State Department of Education, The New Jersey Occupational Competencies Project (1991), the work of the Secretary's Commission on Achieving Necessary Skills (SCANS) reported in What Work Requires of Schools (1991) and Learning a Living: A Blueprint for High Performance (1992), and the output of some of the 22 skills standards projects funded by the U.S. Departments of Education and Labor, including electronics and graphic arts.

Another goal could be the analysis of alternative formats for producing High Performance Learner Workers. Analysis of alternative formats could include ProTech (see Attachment 18). ProTech is a collaborative community partnership to produce HPLW in health occupations: EEG

PRO TECH

STUDENT SUPPORT STRATEGY

The Boston Private
Industry Council
? Oliver Street
Boston, MA 02109



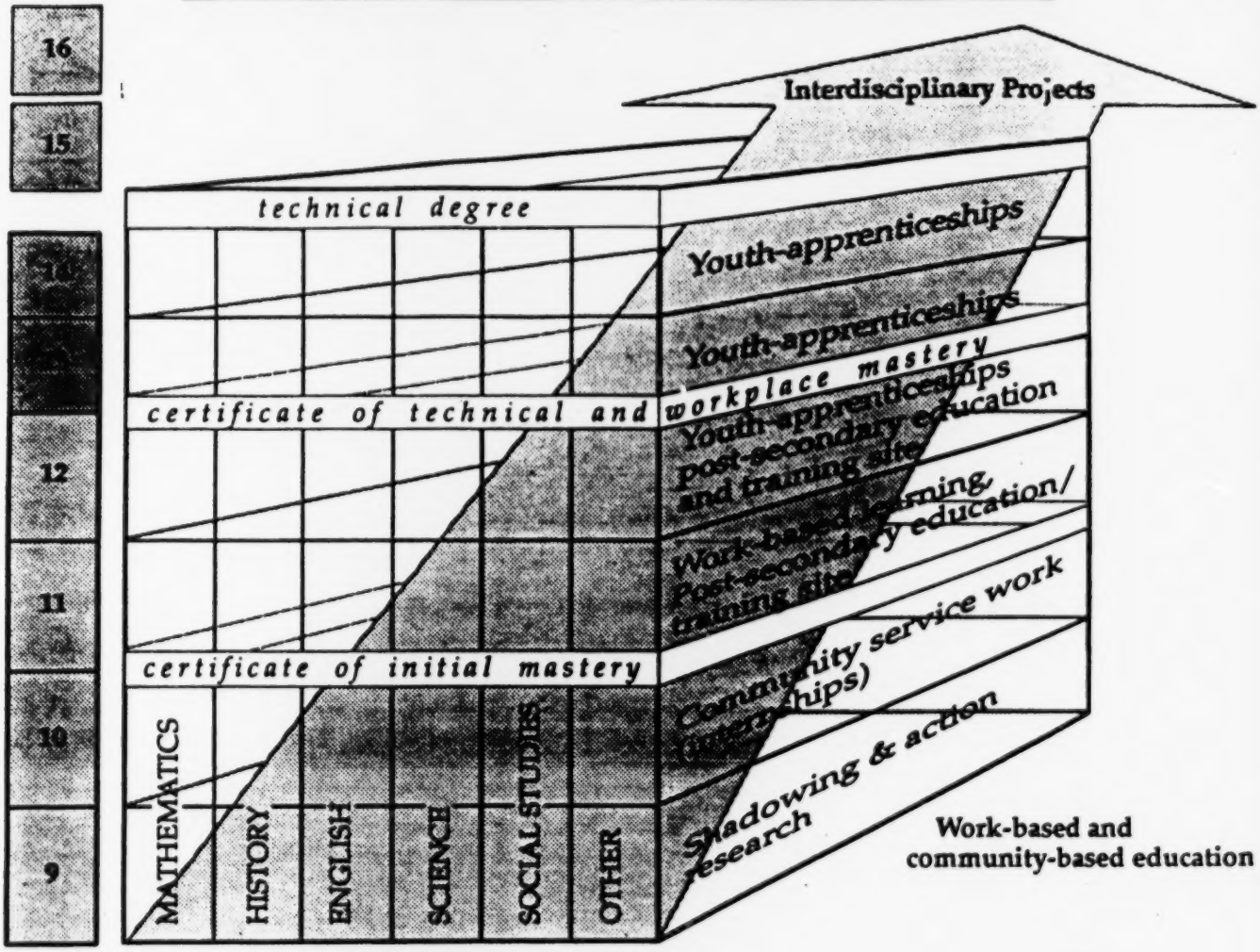
Technician, EKG Technician, Medical Lab Technician, Medical Secretary, Nuclear Medicine Technologist, Operating Room Technician, Radiologic Technologist, and Ultrasonography (Toch, 1991). The conceptual framework recognizes a ProTech student as the primary output of the learning enterprise and then identifies service providers who can contribute to a HPLW. Other formats could be analyzed which incorporate which incorporate a **Certificate of Initial Mastery (CIM)** and a **Certificate of Advanced Mastery (CAM)** with can lead to **Tech Prep Associate Degrees** (TPAD). Project S.M.A.R.T. in Cleveland is an example (see Attachment 19).

The Visual Communications Technology program provides an extraordinary opportunity to imagine the future. Few areas of study could be more exciting than an analysis of the invention of printing by the Chinese and its profound effect upon culture and education throughout the world. Exciting as the history of graphic arts and printing could be, however, the more challenging and vastly more critical area of study is understanding current trends in order to anticipate the future. The graphic arts and printing industry is undergoing fundamental change in **prepress** and **press** functions. **Prepress** includes all functions in the creation and design of a product that will be printed and **press** includes all functions that relate to the printing of products. Some of the changes are having a profound impact on eduction. In 1991, faculty members at the University of California San Diego campus began to create their own textbooks on site through an agreement with McGraw Hill's Primus program. "McGraw Hill Publications Online" includes over 50 periodicals. "Desktop Publishing and Design" is available in an online format from McGraw Hill.

Imagine students involved in the strategic planning process and co-creating an image of life and work in the visual communication and printing and publishing industry and then helping create a multi-year action plan. Genuine partnerships could evolve between education and the private sector in an online format. Course outlines could be in an online format. Student projects could be developed online and transmitted electronically almost anywhere in the world. Horizontal integration and vertical articulation could be done online. Students could complete lower division general education core requirements online in a tech-prep format. Some of the introductory graphic arts and printing courses offered by postsecondary education could be completed in an online format within the existing tech-prep consortium and with other consortia throughout the state, particularly in rural and urban areas. The plan would be a proactive approach to creating a future for a program instead of merely adjusting to circumstances. The program prepares learner workers for a critical industry which uses rapidly changing communication and information technology.

Project S.M.A.R.T.

A collaborative venture of Cleveland Public Schools, Cuyahoga Community College, Cleveland Tomorrow, and Cleveland's Center for Advanced Manufacturing, BP America, and Youth Opportunities, Unlimited (an operating parter of the Cleveland Initiative for Education)



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3-D MATRIX LINKING SCHOOL-BASED TO WORK BASED LEARNING
(including youth apprenticeships and post-secondary institutions for grades 9-14)

Even more exciting is the prospect of involving "third wave" students at various levels in some collaborative interdisciplinary futuring project. Imagine a team of students from the above-mentioned programs collaborating on the creation of a **North Montco Free-Net** for culturally diverse people of all ages. Under the supervision of a team of professionals from education and the private sector, a group of students working toward performance-based outcomes at CIM, CAM, and TPAD levels could create the Free-NET and then waves of other teams could continue to develop services to meet diverse needs in an electronic online format.

Numerous projects could be discussed under an action plan. Few projects, however, are of greater significance than one which relates to technological literacy. Reports by the National Education Goals Panel and the reports on literacy point to the need for a "Morrill Act" type strategy suggested by James Botkin, Dan Dimancescu, and Ray Stata in Global Stakes in 1982. The National Education Goals Panel indicated that America isn't likely to achieve a single goal by 2000. Nebraska Governor Benjamin E. Nelson stated "**Our progress is wholly inadequate**" (NEGP, 1993).

The U.S. is evolving a definition of "literacy" that started with reading comprehension and was expanded to other communication and computational skills. Over the past 20 years, generic and specific technological competencies have emerged as a new area of study (Dyrenfurth, 1984; Groff, 1986; and Yff, 1983). Adult Literacy in America (Kirsch, 1993) used a broad definition of literacy, attempting to assess adults' ability "to use printed and written information to function in society" as well as their capacity to perform everyday functions that involve simple arithmetic. The study found 47% of adults lack literacy needed for work. U.S. Secretary of Education Richard W. Riley said "**This report is a wake-up call to the sheer magnitude of illiteracy in this country and underscores literacy's strong connection to economic status. It paints a picture of a society in which the vast majority of Americans do not know that they do not have the skills they need to earn a living in our increasingly technological society and international marketplace**" (Literacy, 1993).

Several states have launched major projects which focus on workforce quality amd preparation. Oregon established a Workforce Quality Committee with 14 Regional Workforce Quality Committee Service Areas. A vision has been created to guide future investments, shape collaboration and cooperation, hold agencies accountable, and develop partnerships (see Attachment 20). Oregon has developed a CIM, CAM, TPAD, and School-to-Work Opportunity System (see Attachment 21). The Higher Education Coordinating Board in Washington is evaluating alternative organizational models for meeting work force training needs.

OREGON WORKFORCE QUALITY COUNCIL
COORDINATING MECHANISM

- Communicate vision
- Guide future investments
- Require collaboration and cooperation
- Hold agencies accountable
- Develop partnerships with private sector

GOVERNOR

- Establish goals and state strategy
- Develop state policies
- Coordinate training programs
- Establish accountability
- Assess progress
- Coordinate data collection
- Oversee education reform (HB 3565)
- Oversee adult worker retraining
- Approve agency operating plans
- Review agency budgets
- Create Regional Workforce Quality Committees
- Approve regional plans and service agreements
- Serve as State Job Training Coordinating Council
- Serve as Work Force Advisory Council
- Serve as Oregon Occupational Information Coordinating Committee
- Staffed by OEPP

Workforce Quality Council (HB 3133)

- Governor or Designee
- Superintendent of Public Instruction
- Commissioner of Labor and Industries
- Director of Economic Development
- Director of Human Resources
- State Legislator
- Representative of Local Education Agency
- Chancellor of Oregon State System of Higher Education
- Community College Commissioner
- Local Elected Official
- Business (5 representatives)
- Labor (5 representatives)
- Private Vocational School Rep
- Public School Teacher

Council for Professional Technical Education

State Apprenticeship and Training Council

- Advise Workforce Quality Council
- Promote partnerships
- Prepare strategic regional workforce development plans
- Develop service agreements

Regional Workforce Quality Committees

- Adult & Fam Srvcs
- Voc Rehab Div
- Employment Div
- Private Industry Councils
- Colleges & Universities
- EDD Business Development
- Community colleges
- School districts
- Community Action Programs
- Local elected officials
- Business
- Labor

Local Providers

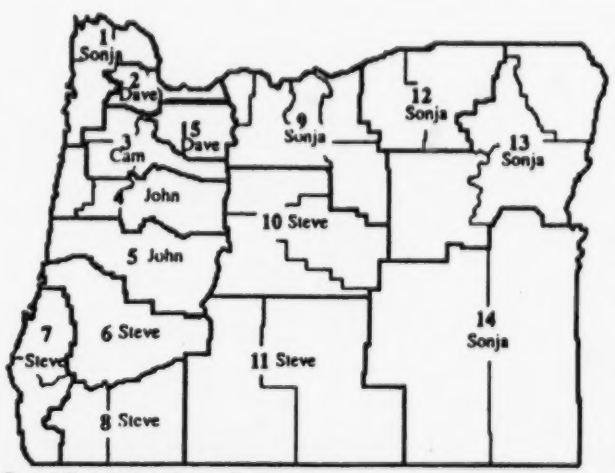
Clients/Customers

OEPP 11/18/93

Workforce Quality Council

REGIONAL WORKFORCE QUALITY COMMITTEE SERVICE AREAS[1]

1. Clatsop
   Columbia
   Tillamook
2. Multnomah
   Washington
3. Marion
   Polk
   Yamhill
4. Benton
   Lincoln
   Linn
5. Lane
6. Douglas
7. Coos
   Curry
8. Jackson
   Josephine
9. Gilliam
   Hood River
   Sherman
   Wasco
   Wheeler
10. Crook
    Deschutes
    Jefferson
11. Klamath
    Lake
12. Morrow
    Umatilla
13. Baker
    Grant
    Union
    Wallowa
14. Harney
    Malheur
15. Clackamas



[1] Workforce Quality Council Technical Assistance Representatives

Steve = Steve Tegger
Sonja = Sonja Svenson
Dave = Dave Tilton
John = John Westine
Cam = Cam Preus-Braly

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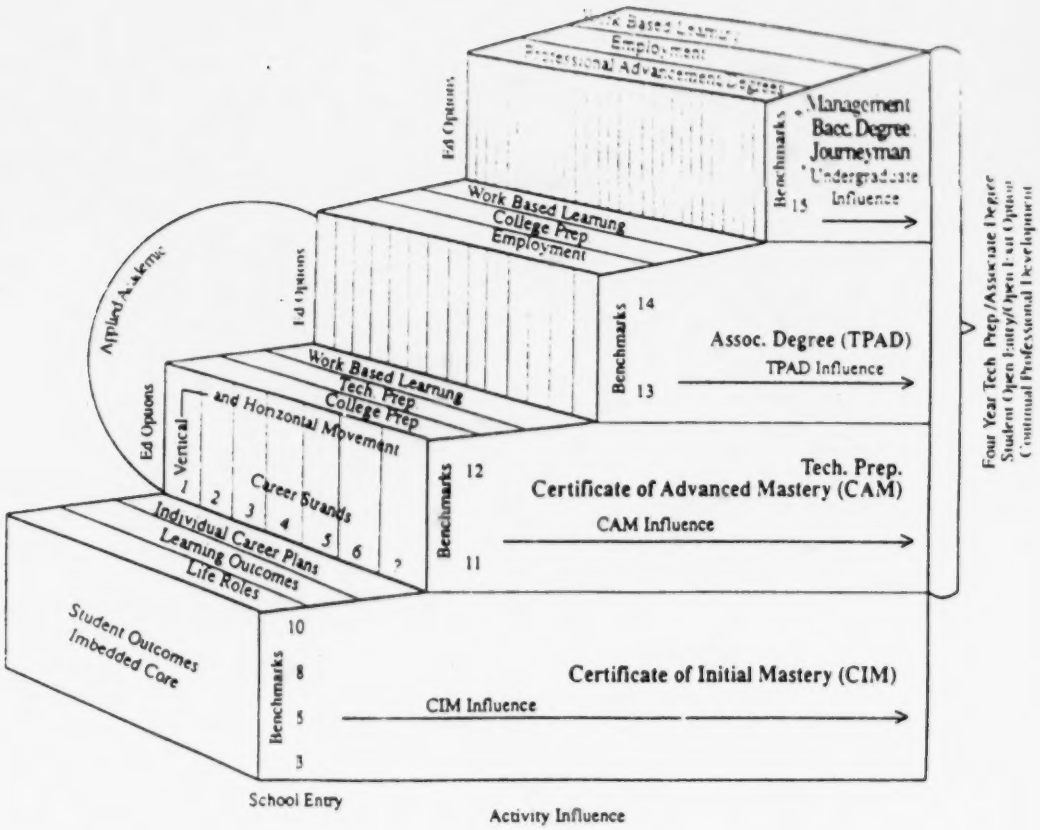
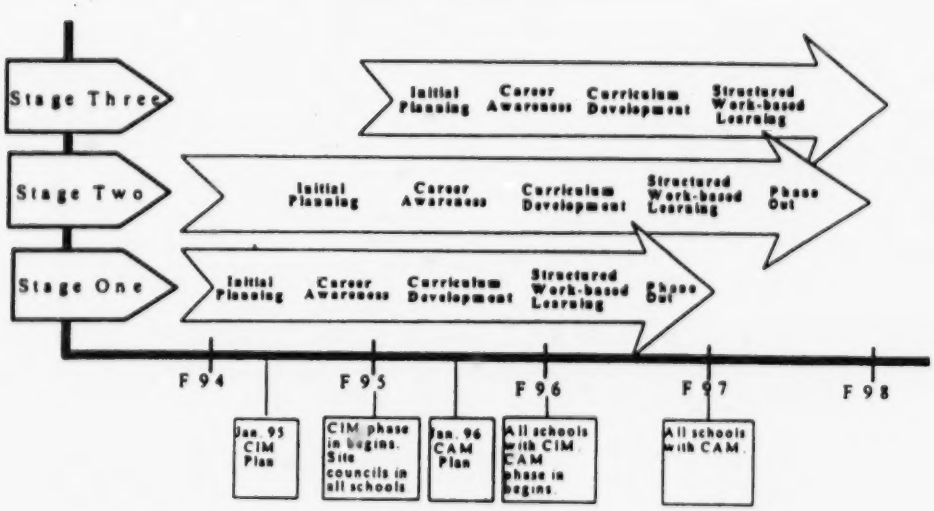


Figure 1

Oregon School-to-Work Opportunities System
Grant Timeline



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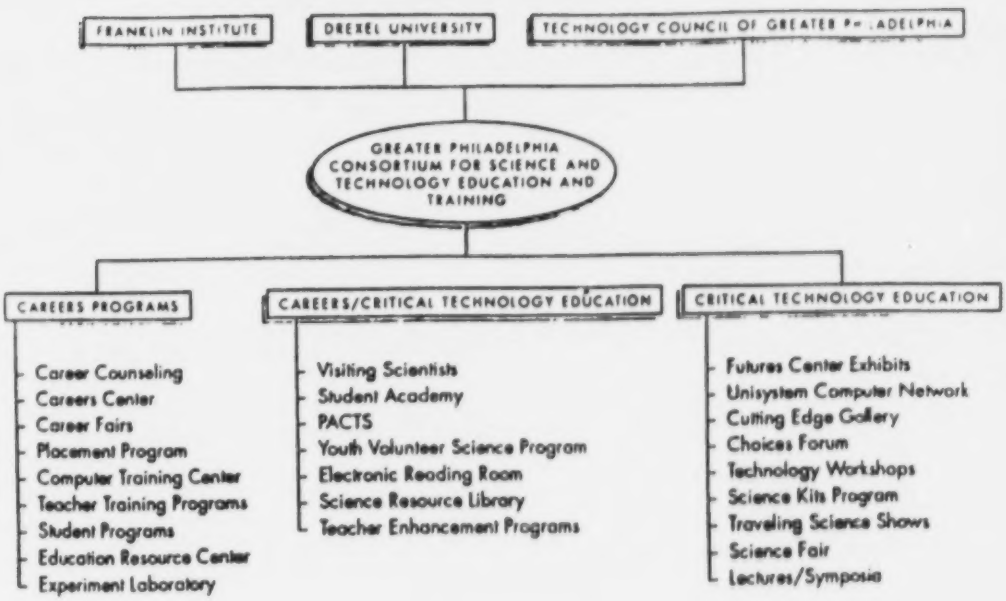
The Franklin Institute, Drexel University, and The Technology Council of Greater Philadelphia have proposed "The Greater Philadelphia Consortium for Science and Technology Education and Training: A Public/Private Partnership" (Greater, 1993). The Consortium will provide concentrated, integrated service and technology education, training, and employment assistance (see Attachment 22a). The Consortium's has two primary goals:
(a) to strengthen the readiness of young people to pursue careers in science, mathematics, and technology; and
(b) to assist military personnel and defense-industry workers in the transition from defense-related occupations to careers in teaching and in high-technology companies.
The Consortium will establish (a) a Science and Technology Education Resource Center, (b) a Critical Technology Education Program, and (c) a Career Program.

Part of the impetus for a comprehensive partnership strategy is the inadequate performance by education in positioning **HUMAN RESOURCES DEVELOPMENT** and **TECHNOLOGY** at the core of the learning enterprise. Part of the impetus is attributable to the Defense Base Closure and Realignment Commission (1993) and the related defense industry R & D and production and distribution infrastructure. The proposal and military employment in the 10 largest states are displayed in Attachment 22b.

A comprehensive partnership strategy represents an opportunity to position the area in a competitive position for the 21st Century. The Franklin Institute embarked on a bold program in 1986 to address shortcomings of American education and industry to improve student and worker competencies in mathematics, science, and technology. The first stage was the construction of the Futures Center (Mintz, 1989) that will contain exhibits such as BioScience, FutureComputers, and FutureMaterials. Another partner is Drexel University and its distinguished record in technical education and teacher preparation. Noteworthy are Drexel's specific programs such as in graphic design and library science and the commitment to co-operative education.
The Technology Council of Greater Philadelphia (TCGP) has merged with the Technology Council of Central Pennsylvania (TCCP) to form the Eastern Technology Council (ETC) which increases the potential contribution for both councils.

Another important part of the infrastructure is PENNTAP. PENNTAP was created in 1965 as a university based technology assistance model. PENNTAP administers the Federal Economic Development Administration/ University Center Program to access the Federal Laboratory Consortium information and technology. The Southeastern Sector office is at Penn State Great Valley which is also the coordinating center for graduate programs in education for the Delaware and Ogontz Campuses of Penn State (see Attachment 23).

Program Organization



Military Employment in 10 Largest States (total U.S. military employees = 2,223,015)

State	Population	% of nation's population *	Number of DOD employees **	% of total DOD employees
1. California	30.4 million	12.1	309,991	13.9
2. New York	18.1 million	7.2	42,705	1.9
3. Texas	17.3 million	6.9	169,000	7.6
4. Florida	13.3 million	5.3	107,425	4.8
5. Pennsylvania	12.0 million	4.7	56,438	2.5
6. Illinois	11.5 million	4.6	51,712	2.3
7. Ohio	10.9 million	4.3	47,035	2.1
8. Michigan	9.4 million	3.7	20,010	0.9
9. New Jersey	7.8 million	3.1	37,096	1.7
10.North Carolina	6.7 million	2.7	115,571	5.2

*Resident state population as of Dec. 30, 1991
**Military and civilian employees as of Sept. 30, 1991
Sources: Department of Defense and U.S. Bureau of the Census

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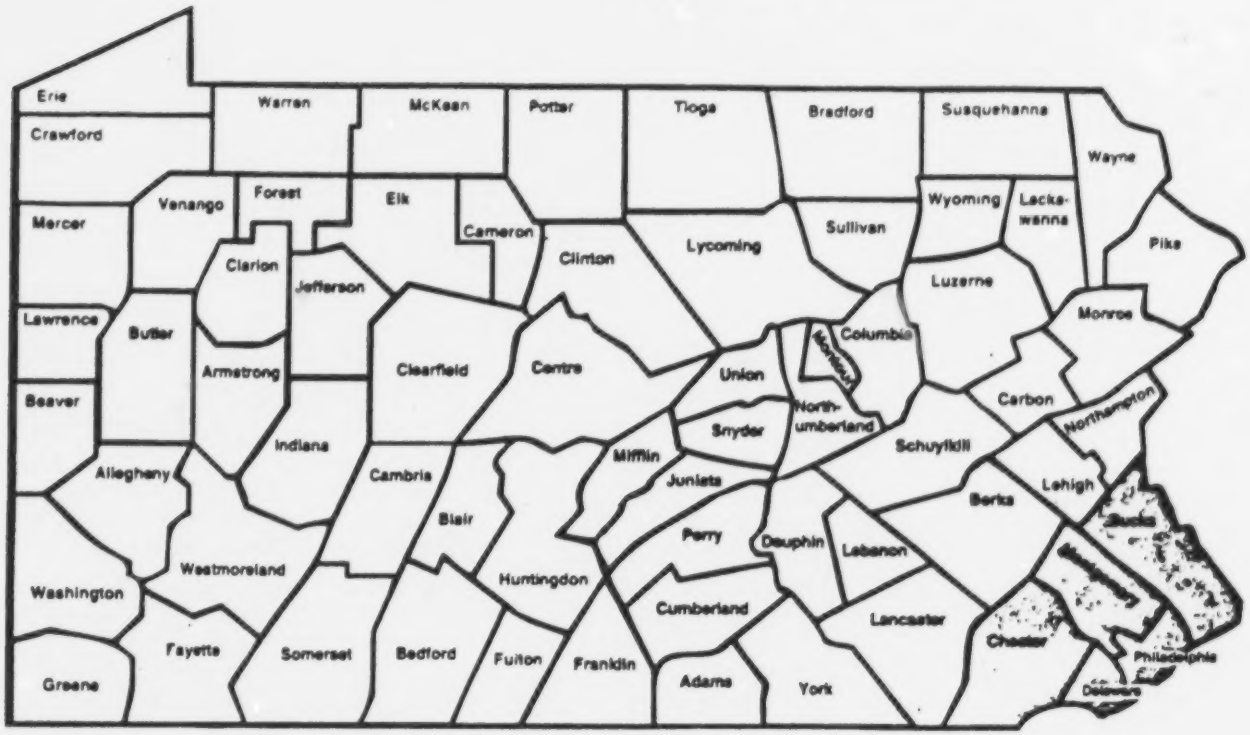
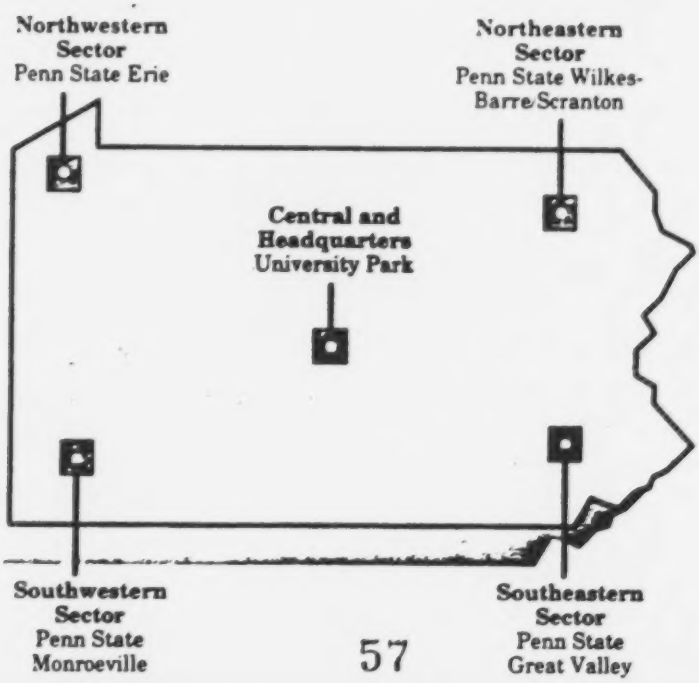
Technology Council of Central Pennsylvania Counties

Technology Council of Greater Philadelphia Counties



Regional Office Locations



Research indicates that at least four terms are related to assessing the external environment. **Needs assessment** is used to determine if a program is needed. **Market analysis** is used to describe the needs and wants of a particular group of people. **Environmental scanning** is used to indicate a snapshot. **Trend analysis** is the systematic analysis of comparable data over equal increments of time to determine direction. A strong case was made for trend analysis, the integration and synthesis of trends to produce insights about impact workplaces, interpretation of insights in terms of implications for HRD performance, and conversion of the information into alternative ways disciplines and subjects can be organized to produce HPLWs. A single school district, not even all the school district in an AVTS, has the intellectual capital to adequately do that job. The proposed Greater Philadelphia Consortium holds the potential to do that job in a qualitatively superior manner. If that becomes a reality, school districts can use the vision of life and work in the advanced technical era for purposes of program review and multi-year technology education plans.

The multi-year plan can be based on the adoption of standards set by the National Council of Teachers of Math, Project 2061 with benchmarks, and technology (Science for All Americans, 1991, and Benchmarks for Science, 1993). What goals and objectives should be set to raise levels of awareness of **advances in science and technology** and the impact on workplaces and workforces? What goals and objectives should be set to raise the level of awareness and understanding about **globalization**? What goals and objectives should be set for creation of **open entry/ open exit curriculum**? What goals and objectives should be set for **continuous quality improvement toward standards**? What goals and objectives could be set to be accomplished by an AVTS and other participants in a tech-prep consortium?

	1994-95	1995-96	1996-97	1997-98	1998-99	99-2000
	Plan to Plan	PLAN	Plan Implementation			Eval of Outcome
North Montco						
Methacton						
North Penn						
Perkiomen V.						
Souderton						
Wissahickon						
Montg Co CC						
Penn State O.						
Other Postsec.						

What goals and objectives could be accomplished for the Greater Philadelphia Consortium area (see Attachment 24)?

Attachment 24

Strategic Planning by School Districts in Greater Phila Area

Seventeen school districts in Bucks, Chester, Delaware, and Montgomery counties created strategic plans in Phase I in 1993-94. Eighteen school districts are creating strategic plans in Phase II in 1994-95. Twenty-six school districts in the above-mentioned counties and Philadelphia will complete strategic plans in Phase III in 1995-96. Most AVTS and Centers are scheduled for Phase III.

		1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Bucks	7		5 + 1		1 + 2		
			G 1, Readiness				
			G 4, Ma Sci Te				
Chester	2		5		5 + 2		
			G 1, Readiness				
			G 4, Ma Sci Te				
Delaware	5		5		5 + 2		
			G 1, Readiness				
			G 4, Ma Sci Te				
Montg	3		3 + 1		15 + 3		
			G 1, Readiness				
			G 4, Ma Sci Te				
Phila					1 + 11		
			G 1, Readiness				
			G 4, Ma Sci Te				
Totals	17		18 + 2		26 + 20		

Key:
First number represents school districts.
Second number represents AVTS and centers.
G 1 Readiness - America 2000 Goal 1 Objectives
G 4 Ma Sci Te - America 2000 Goal 4 Math and Science

Libraries and Media Centers

The library/media center is essential in the global networked era. The role of the library has changed dramatically in the last decade. The library and media center have been transformed into an information and technology hub that is already indispensable to students and staff. There is evidence that library and computing services organizations have begun to converge as the technologies used to store and transmit information become similar. Furthermore, there is evidence that the characteristics inherent in information combined with the technical capability provided by new information technology have created the prospect of a new range of possibilities. Distance is irrelevant. The data bases and expert systems can be accessed in a variety of settings -- workplaces, community agencies, or home.

The centrality of the library and information services is seen in numerous activities and projects. One example is the White House Conference on Library and Information Services for Productivity, for Literacy, and for Democracy was held in July 1991. The National Commission on Libraries and Information Science (NCLIS), with assistance from a 30 member Conference Advisory Committee, planned the White House Conference authorized under Public Law 100-382. The 50 states, District of Columbia and U.S. territories, as well as American Indian Tribes and federal library units conducted preconference activities to ensure widespread participation among constituents to develop priorities.

The Governor's Advisory Council (GAC) and the Council of Pennsylvania Library Networks (CPLN) advise the Commissioner of Libraries. GAC has been working with the recommendations that came out of the Governor's Conference on Libraries in 1991. The CPLN is working on preservation issues, collection development issues, and a revamping of the 1987 Interlibrary Loan Code. Campus planning for libraries within the State System of Higher Education rests with SSHE library directors.

The Pennsylvania Community College Library Consortium recognized the centrality of the library/media center and adopted a Vision Statement at its June 1993 meeting. If the vision is transformed into action plans and implemented, the new units hold the potential for re-engineering learning and can serve as the catalyst for for creating 21st Century info era learning communities throughout their service areas.

The most widely-know database for schools is ACCESS:PA. It contains the records of 34 academic libraries, 254 public libraries, 491 high schools, 135 middle schools, 39 elementary schools, 28 IMSs, and 23 special libraries.

Consumer Oriented Communiversity

Numerous issues will be important in the years ahead. No issue will be more important, however, than the pursuit of "Launching A New Era of Equality and Excellence in Education." Although technology holds the potential for re-engineering the learning enterprise, it has already become a civil rights issue because of access to knowledge.

There are many parallels between the manufacturing and service sectors of the economy. First, both are being modernized and restructured. Manufacturing experienced both modernization and restructuring before the service sector. Manufacturing tends to be in the private sector and subject to international competition and the service sector tends to be in the public sector and subsidized by taxes. The service sector of the economy will be modernized and restructured to increase productivity at less cost (Samuelson, 1991) (see Attachment 24a). Second, the competency and skill levels needed in both sectors are much higher today than they were a few years ago and will increase in complexity and sophistication. Third, human obsolescence is occurring at an increasing rate and updating of knowledge and skills levels cannot be done effectively and efficiently in traditional formats.

One of this nation's highest priorities must focus on improving the quality of life for infants and young children which represent our most precious resource, and our future. Economies are being restructured with devastating impact not only through loss of jobs but also benefits and downsizing or elimination of services. Innocent young people are the victims. Care givers and service providers along with community boards need help in Finding Common Ground (Jones, 1993) and in Building Communities of Care (1993). Communities need help in learning to learn how to create full service caring and learning environments (Loftin, 1994) and in developing visions and action plans for the use of technology in the delivery of services (Conklin, 1994). The Empowerment Zone and Enterprise Community programs will fundamentally restructure services at the local level. The communities that receive the federal funds will be the lucky ones. However, there are thousands of communities so needy they could not even respond to the Request For Proposals. What is the role of a communiversity in either circumstance?

Although one of the nation's first priorities must be about infants and young children, another high priority must be the creation of new approaches to learning which will yield a HPLW with the competencies and skills necessary for workplaces of an advanced technical era in the 21st Century. Instruction in the industrial era was subject-centered and provider controlled. Problems in the real world simply do not break down into the elements of the disciplines of math,

PRODUCTIVITY: MANUFACTURING VS. SERVICES

ESTABLISHMENTS	PERCENT OF ECONOMY	INCREASED PRODUCTIVITY 1980-1990	PRICE INCREASE
MANUFACTURING	20.0%	3.5%	3.1%
SERVICES	50.0%	0.2%	5.2%
	1980-1986	+0.6%	
	1986-1990	-0.5%	

Robert J. Samuelson. "A Shakeout in Services." Newsweek. Vol. CXVIII, No. 6, August 5, 1991, pp 64-65.

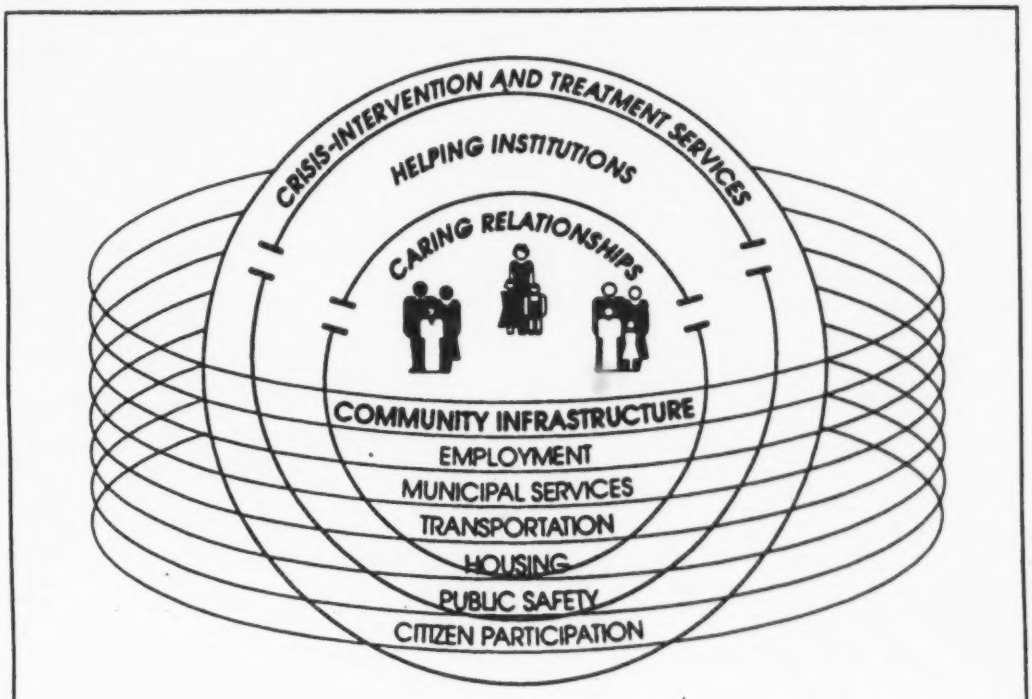


Figure 1. A Vision of Communities Where Learning Can Happen

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science, and technology. The very nature of knowledge is changing. There are more effective ways to package the knowledge to create solutions to a sequence of problems.

The Delaware Valley and New Jersey Route 1 corridor are poised to be **knowledge producing centers in restructuring.** The corridor is headquarters for a great many multi-national corporations and new enterprises that produce and use the technologies that are critical in the 21st Century. These companies must "communicate" the application of their goods and services to many different consumers. The Delaware Valley is an ideal location to create models of 2020 full service learning environments based on advances in the cognitive sciences, **mind,** and communication and information technology, **systems.**

Leaders have begun to realize the centrality of the brain and research in the **cognitive sciences.** Scientists can now peer into the human brain through magnetic resonance imaging (MRI) and observe changes that occur as the mind works (Gelman, 1992). Imagine being able to observe **cognitive synapses** while a human is engaged in the inputting, processing, and outputting information such as the integration of math, science, and technology. This has tremendous implications for formatting learning experiences.

The Asynchronous Transfer Mode (ATM) fast packet switching technique to transmit data in short, fixed size cells at 1,000 times greater than the 1992 rate is a major breakthrough advance that has tremendous implications for restructuring work. IN CUBE Voice Command for Sun workstations incorporates advanced real time speech recognition software. Imagine talking to your workstation using thousands of your own customized voice commands that are instantly recognized and translated into action (Mikes, 1993). IN CUBE, headquartered in Mechanicsburg, PA, is being used by hundreds of private and public sector establishments. There are at least 36 corporations making the technology that belong to the ATM Forum.

Other technologies are important. By combining **Optical Character Recognition** with a **voice synthesizer**, the Reading Edge scans and recognizes text from documents, books, or electronic fax files, then reads the text aloud to users. The languages that can be read are English, German, Spanish, French, Norwegian, Swedish, and Italian. Each is available on a SmartCard. Furthermore, a corporation in Nebraska has developed software to translate English into Chinese. Breakthroughs will occur with other languages of Pacific Rim countries. Imagine applying this know-how and technology to improve communication to culturally diverse families for literacy related to **readiness for parenting, readiness for preschool,** or **readiness for work.**

The New American Schools Development Corporation (NASDC) funded the **Community Learning Centers** (CLC) project in St. Paul, MN. The CLC project used 10 focus areas to progress through thinking strategically about the design process to identify preliminary and advanced research that would be needed to create CLCs and then replicate them. The 10 areas were **brain based learning, people oriented, world as campus, progressive curriculum, major use of technology, integrated social services, hub of activity, headquarters for learning, staffing alternatives, and site managed** (see Attachement 25). The CLC project completed the initial planning year in 1992-93. CLCs are being implemented in several designs in six sites that will operate year round, 24 hours a day, for all ages. **Comprehensive Learning Centers** were created throughout the 1980s to help education mature from generic batch processing "education for all" to customized "learning for each." Several educational institutions have accepted the learning for each philosophy and are now delivering **"open entry - open exit"** programs and services to a majority of students with profound impact on student learning outcomes and retention. Within a decade, the know-how of the Comprehensive Learning Center has been applied to Community Learning Centers (Design, 1993).

How would a region create a learning community to think strategically about a next generation CLC that would use contemporary research about cognitive synapses and electronic networks and focus on literacy and productivity? Because **education is essentially a state function** in the U.S., a governor or group of governors could initiate partnerships with private sector establishments to create learning communities. **Governor's Superschools** (Toch, 1993) could be created in a manner somewhat similar to those created by the NASDC. Teams of consumers and providers could be appointed to subcommittees for each of the 10 above-mentioned or other categories. The teams could include consumers of all ages and cultures, including gifted and talented Jules Vern **nintendo** types. "Gifted kids are bored by U.S. schools" (Henry, 1993). What has happened to talented students in science is a disgrace (Tobias, 1992). They are uninhibited and unintimidated by "scholars" and technology. Classical definitions of gifted and talented would be set aside for informed judgment and representation. The teams would have an orientation on (a) unity of purpose, (b) developing the specifications, and (c) technology. The teams would create the specifications via ATM and IN CUBE type technology as well as accessing experts through NSFNET, Internet, and systems (Krol, 1991, and Braun, 1994).

Communiversity Online

Advances in technology make it possible to deliver instruction to home and work settings and to access library resources, thus reducing geographic, physical, and temporal

COMMUNITY LEARNING CENTERS

- Headquarters for learning
  - Open year round, day and night
  - Well provisioned
- Brain based learning
  - Experiential
  - Stimulation
  - Safe and secure
  - Learning vs. teaching paradigm
- Progressive curriculum
  - Curriculum = all experiences
  - Strengths and success oriented
  - Personal growth plans
  - Thematic, interdisciplinary
- Hub of activity
  - Engaged learners
  - Projects of all types
  - Learning labs, studios
  - Exploration and inquiry centers
- Major use of technology
  - Computers: WP, SS, DB, Graphics,
  - Video studios and satellite reception
  - Discourse lab
  - Radio station
  - Printing and publishing
- World as campus
  - Door swings both ways
  - Use deep reservoirs of talent
  - Learning expeditions
  - Traveling classrooms
  - Exchanges
- Integrated social services
  - Co-location
  - One-stop center for services
- People oriented
  - All races, all ages
  - All are learners, all are teachers
  - Every person celebrated and respected
  - "Can-ness" oriented
- Site managed
  - Stakeholders make decisions
    - Budget
    - Program
    - Staffing
  - Teachers: decision makers
    - With accountability
  - Quality emphasis, client oriented
    - Do it right first time
    - Accelerate, don't remediate
- Staffing alternatives
  - Professional and paraprofessionals
  - Facilitators, orchestrators of learning
  - Students as resource
  - Community resources
  - Teacher training: alternate route
  - Contracted services

limitations. Collaborative learning in an online format with professionals throughout the global learning community provides access to a broader perspective and more models.

Leadership and human resources development are critical to inventing more effective full service caring and learning environments. A **Leadership** seminar could focus on societal problems and the need for visionary leadership, research on leadership, strategic planning, organizational development and human resources development, transformational thinking, and professional development. Transformational thinking could include reframing, mindfulness, holistic thinking, creativity, cybernetic thinking, systems thinking, chaos theory, and military strategy. Visioning would include the content (beliefs, values, conceptual frameworks, research, and practice) and process (creation within and co-creation between and among different perspectives) to produce a "future pull" atmosphere which energizes people.

A **Human Resources Development** seminar could focus on any one HRD project identified in the strategic plan. The seminar could elaborate and refine the analysis for that project. A project could focus on culturally sensitive strategies for introducing **science in the early years.** Or a project could be developmentally appropriate technology education in the early years for **"The Communication System."** Analysis could be followed by a vision creation and co-creation learning experience focused on "Communication and Information Technologies in the 21st Century." The major product of the HRD seminar would be the development of a multi-year action plan for the project. Individual professionals are doing that now and obtaining funding for various K-12 projects. Imagine the potential of a group of **early elementary teachers from a school district** working on similar projects related to a goal in the strategic plan. Or, imagine the potential of teachers creating online 2+2+2 tech-prep articulation agreements that incorporate the SBE student learning outcomes. Students and faculty could access McGraw Hill Publications Online or access databases from **Knowledge Express.**

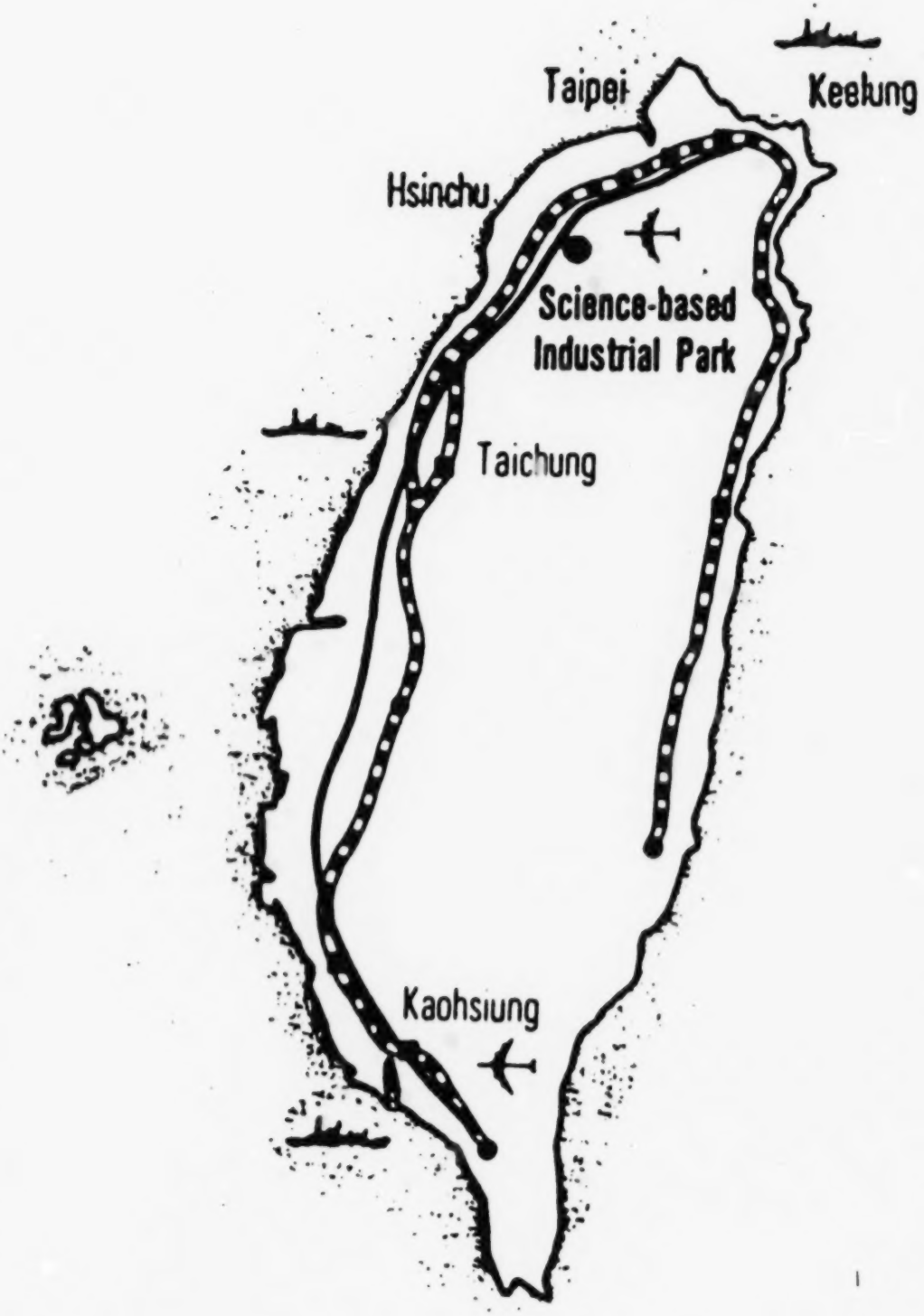
The communiversity could conduct training programs to help staff. A sequence could be **Highway Construction 101, Net Repair 102,** and **Global Messages 103.** The evolution of the communiversity could lead to becoming a globalversity as described in the next section of this statement. FSU is well positioned to mature as a communiversity and emerge as a globalversity with assets such as the Center for the Study of Higher Education, the American Center for the Study of Distance Education, the Inter-American Center for the Study of Distance Education (CREAD) comprised of 30 universities, and the National Center on Postsecondary Teaching and Learning Assessment. The College of Education has awarded over 60 doctorates to professionals in Taiwan.

INFO ERA LAND GRANT GLOBALVERSITY

The Pacific Rim contains some of the oldest cultures in the world. They have made many contributions to the well-being of other nations. For example, the Chinese invented printing. Taiwan, Republic of China, has demonstrated something that is unparalleled in the history of the world, an "economic miracle" that came about primarily through the Sino-American Mutual Defense Treaty signed in 1955 and the **Industrial Vocational Education Cooperative Project** which restructured curriculum and renewed teaching-learning in the industrial vocational high schools of the R.O.C.(Groff, 1992). One indicator of the success of the partnership is the increase in per capita income. "In 1951, the average per capita income in Taiwan was only about 100 U.S. dollars, and it was about 450 U.S. dollars in 1965. However, in 1990 it had gone up to about 8,000 U.S. dollars" (Chang, 1991). The restructured curriculum and focus on teaching-learning attracted 70% of the senior high school students into the industrial vocational education system (Chang, 1991). This demonstration of an **effective partnership** built on technology transfer yielded a win-win situation for Taiwan and the United States. It is possible to replicate the partnership with Taiwan to create a next generation full service learning models as well as join together with other nations and create "**Pacific Rim Learning Communities?**"

The Six-Year National Development Plan for Taiwan, Republic of China (1991-1996) will be followed by another multiyear plan with new macroeconomic development targets. The plan will undoubtedly continue many of the same themes in the current plan. The U.S. has reaffirmed its intention to continue the Sino-American Mutual Defense Treaty which may influence the shaping of some targets. The marcoeconomic development targets will be converted into specific projects by the National Science Council of the Executive Yuan like the Hsinchu Science-based Industrial Park (HSIP)(see Attachment 26) or the National Science and Technology Museum with its planned 18 permanent exhibits. Many of these projects are promoted through the USA-ROC Economic Council at the annual conference. The plan could include entirely new projects and joint ventures in education. All projects require HRD.

A great deal of Taiwan's success is attributable to the **Industrial Vocational Education Cooperative Project.** As indicated earlier, countries that belong to the Organization for Economic Co-operation and Development (OECD) are looking for ways to produce High Performance Learner Workers for the emerging advanced technical era. Taiwan began to analyze The Development of Vocational Industrial Education in the Republic of China, Taiwan (Sheu, 1985) and then critically evaluated vocational education in several industrial nations through visits and conferences. Taiwan has (a) increased


Taipei
Keelung
Hsinchu
Science-based
Industrial Park
Taichung
Kaohsiung

the compulsory years of education, (b) implemented technology education, and (c) started to adopt alternative nontraditional education. Why not a joint venture on "Total Quality Product Line Planning, Management, and Evaluation" of multicultural specialists in graphic communications with Certificates of Initial Mastery and Advanced Mastery in an Tech Prep Associate Degree format?

"A Sino-American Partnership For An Advanced Technical Era" could be created for moving "Toward the 21st Century Learning Communities of the Future" (Groff, 1992). A Think Tank Team (TTT) comprised of representatives from Taiwan and the U.S. could create a vision by thinking strategically about life and work in the 21 Century around the Pacific Rim and specifically in Taiwan and the U.S. (see Attachment 56). The TTT could read information and then tour Taiwan and the U.S. for briefings and to see the infrastructure. The TTT could hold a visions co-creation meeting at the East-West Center in Hawaii to become more familiar with resources throughout the Pacific Rim. The co-creation and preferred scenario process could be conducted through ATM technology (see Attachment 27). The preferred scenario would be transformed into a multiyear action plan. The action plan goals categories could consist of items listed below.

	Year 1	Year 2	Year 3	Year 4	Year 5
(a) Policy					
(b) Human resources development					
(c) Curriculum: content and process					
(d) Technology for technology ed.					
(e) Instructional technology					
(f) Facilities: existing and new					

Imagine a Sino-American partnership to promote cultural understanding and peace throughout the world via graphic communications. From a **policy** perspective, what would need to be done for such an effort? From a **HRD** perspective, what preservice and inservice training programs should be offered for policy makers, leaders, and teachers? From a **curriculum** perspective, what is the **content** that would go into a communications technology education program at various level from elementary through graduate education to produce a High Performance Learner Worker? How would the content be **formatted** in a (a) **vertical articulated** sequence of learning experiences and (b) in a **horizontal integrated** fashion and linked to other disciplines? What is the balance in content between preparation in **desktop electronic publishing** vs

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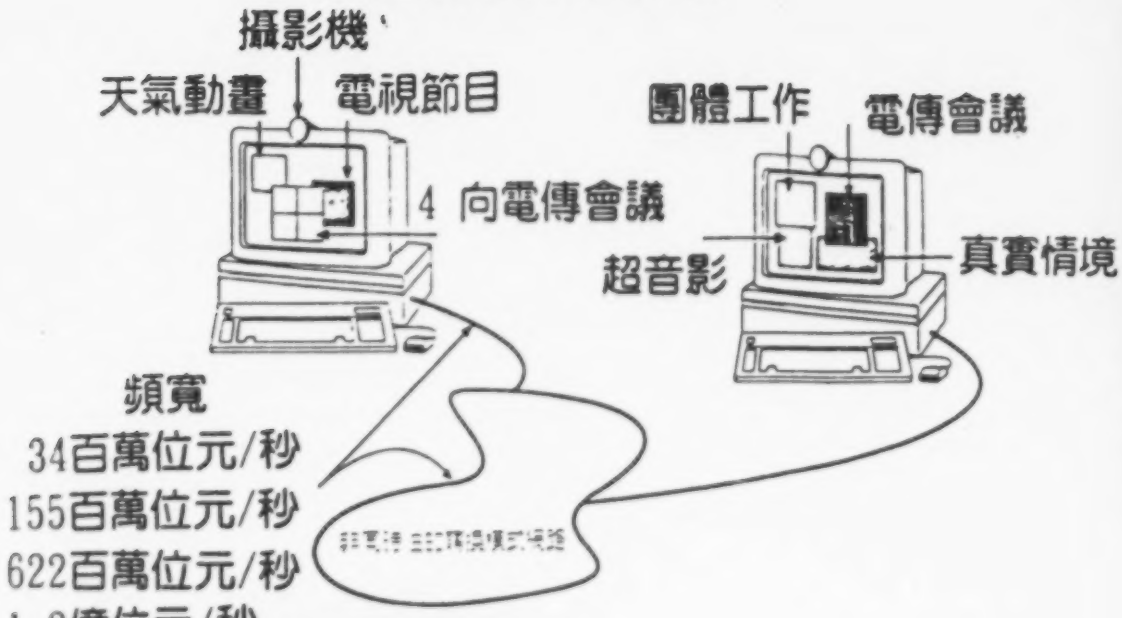
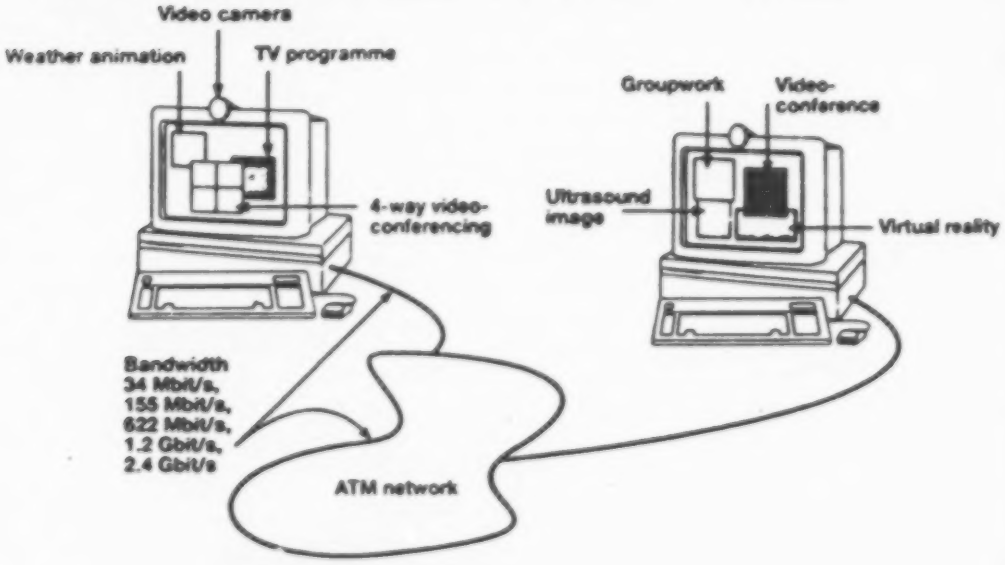


BROADBAND APPLICATION ENVIRONMENT

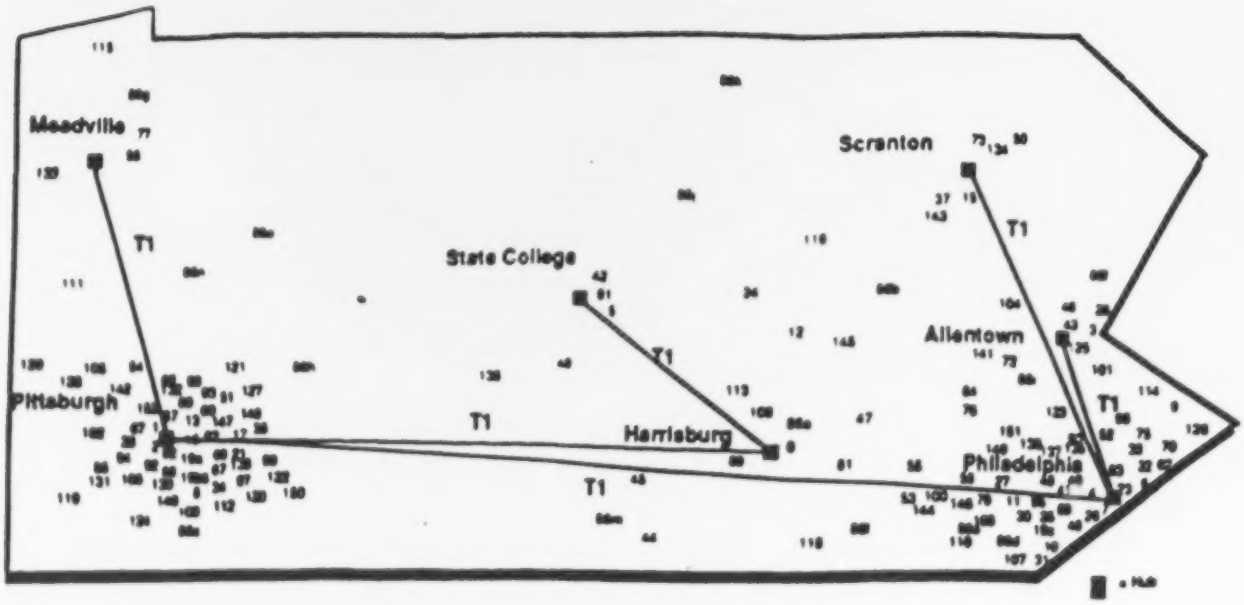


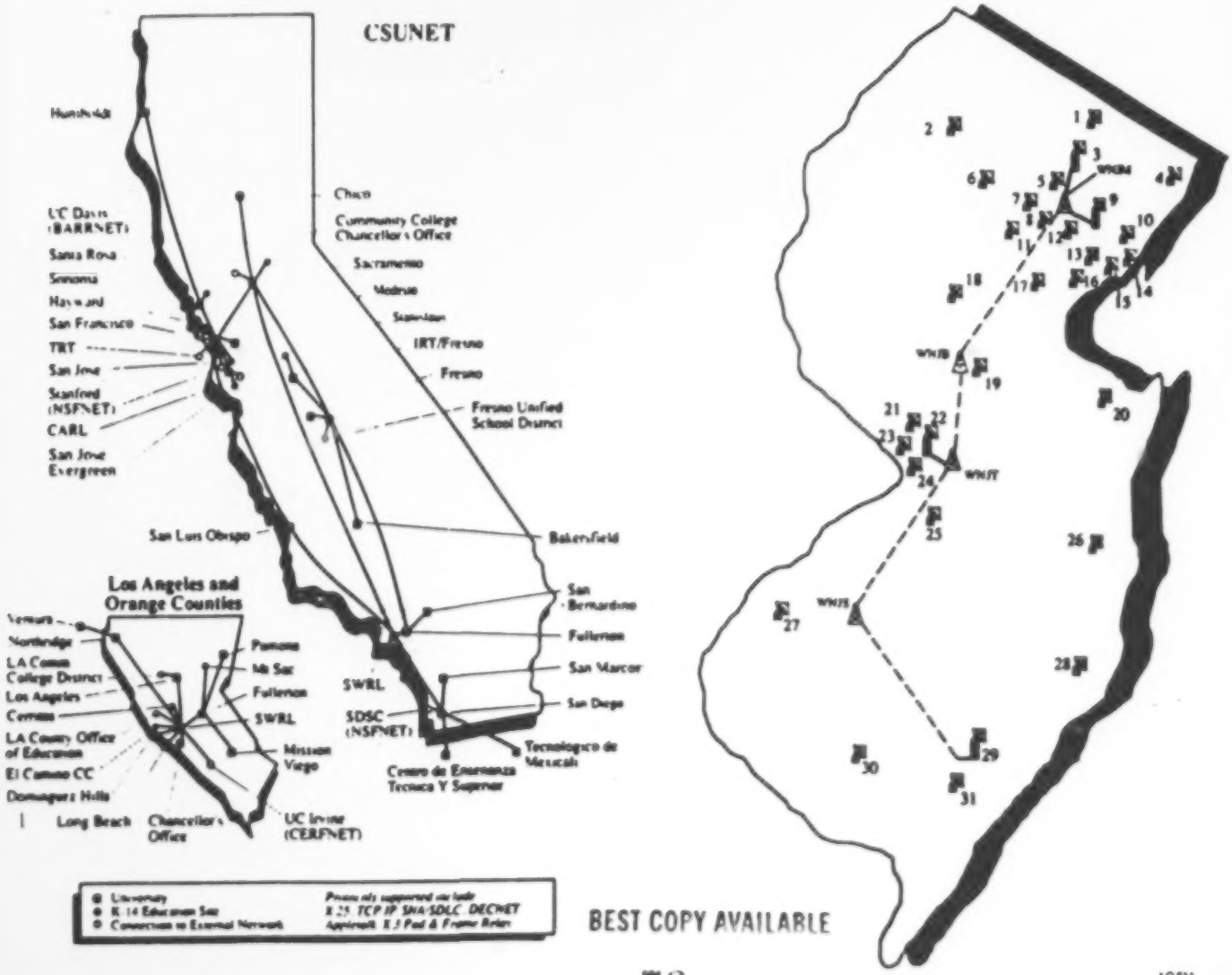
traditional methods of prepress, press, and postpress? How can curriculum planners create an articulated system of certificates and degrees with competency benchmarks that are solution based with an appropriate performance appraisal system? How can leaders shift from bureaucratic, layered, traditional schools and colleges to entirely new organizational structures like Community Learning Centers based on open entry/open exit concepts? Technologically, it is possible to anticipate that in the near future our countries will have ATMs with continuous voice activated language conversion software on a PC using cellular communications to access databases through local area networks. What are the specifications of the technological infrastructure standards to effectively communicate among nations and how can existing facilities be retrofitted.

Taiwan and the U.S. can prepare unilaterally for the future or they can do it in concert with each other and with other countries. The discussion focused on ENDS related to improved quality of life through graphic communications and a proactive approach to planning for restructuring education by focusing on learning. A bio-related network of CA, NJ, PA, and other states could deliver health promotion strategies throughout the world (see Attachment 28). "Learning to Learn" is more than merely adjusting or reacting to circumstances. "Learning to Learn" is a conscious deliberate attempt to create/invent something new.

Furthermore, Taiwan and the U.S. have demonstrated their ability to co-create a better world. Everyone would be quick to recognize there is tremendous potential for economic gain. After Canada and Japan, the economies of Hong Kong, Mainland China, and Taiwan together comprise the U.S.'s third largest trading partner (USA-ROC). Economic integration of these three countries will constitute the world's largest single ethnic market. Mainland China has 22% of the world's population and is the nation with the fastest growing middle class of consumers. Cultural knowledge through graphic communications is key. Motorola recognized this potential and expanded its reach as well as its HRD capability by extending Motorola University West from Mesa, AZ, to Beijing, Hong Kong, Kuala Lampur, and Singapore through its Asia Pacific Center.

Southeast Asian countries are implementing distance education. The Southeast Asian Ministers of Education Organization (SEAMEO) the project "A Scenario for Education in Southeast Asia in the Year 2015." Building Scenarios for Education in Southeast Asia: The SEAMEO INNOTECH Experience identified distance education as a major thrust in the immediate future (Habana, 1993). SEAMEO is a logical "cluster" of countries to involve in a multilateral project, the type of effort suggested in The Next American Frontier and The Work of Nations (Reich, 1991).





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CONCLUSIONS

The world is undergoing fundamental restructuring. The European Community, the Pacific Rim countries, and the North American Free Trade Agreement countries are adjusting their economies in order to be the dominant region in the new world order. The nations, regions, and states that will be the beneficiaries of the structural change will be the ones that adjust and restructure systems and human resources development infrastructure to produce knowledge workers for the new information era.

The U.S. needs establishments committed to inventing Learning Communities, a federation with a Communiversity or Globalversity at the core. It could accept a challenge such as "To design and perfect a human resources development system to produce knowledge workers of the 21st Century." While not all the knowledge is available to invent such a system, the words have a "future pull" magnetism to them that suggests that a community of scholars with expertise in theory, research and applications should be able to create bold, visionary models with increased excellence, somewhat akin to The Edison Project and the New American Schools Development Corporation Project. Consumer oriented communiversities would commit themselves to instruction, research, and service to meet the needs of a regional service area through genuine partnerships and contemporary how-how and technology. Globalversities would commitment themselves to impacting on the problems like famine and AIDS of the have not nations. These establishments should become committed to achieving the Malcolm Baldrige National Quality Achievement in Education for Teaching, Research and Service.

A College of Eduction Alumni Society Board of Director of a Communiversity has a major advisory role to play as the institution evolves into a Globalversity. Alumni are major stakeholders of the learning enterprise, beneficiaries of a system that served them well during a phase of evolution. The evolution, however, is far from complete. Stakeholders have an obligation to make sure that beliefs and values about equality and quality in the American democratic society are reaffirmed and that policy is in place to guide the enterprise through the next increment of growth in a deliberate proactive manner.

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Technology is the primary vehicle by which institutions of higher education are going to re-engineer the teaching and learning process.

Robert C. Heterick, Jr., President, EDUCOM
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October 7, 1992, p. A-17.

BIBLIOGRAPHY

America 2000: An education strategy (1991). Washington, D.C.: U.S. Department of Education.

America's choice: High skills or low wages. (1990). Rochester, NY: The National Center on Education and the Economy.

Benchmarks for science literacy. (1993). Washington, DC: American Association for the Advancement of Science.

Botkin, J., Dimancescu, D., Strata, R. (1982). Global stakes: The future of high technology in America. Cambridge, MA: Ballinger Publishing Company.

Bottoms, G., and Presson, A. (1989). Improving general and vocational education in the high schools. Atlanta, GA: Southern Regional Education Board.

Boyer, E.L. (1991). Ready to learn: A mandate for the nation. Princeton, NJ: The Carnegie Foundation for The Advancement of Teaching.

Braun, E. (1994). The internet directory. New York: Fawcett Columbine.

Bruffee, K.A. (1993). Collaborative learning. Baltimore, MD: The Johns Hopkins University Press.

Burns, J.M. (1978). Leadership. New York, NY: Harper & Row.

Carnegie Corporation (1994). Starting points: Meeting the needs of our youngest children. New York: Carnegie.

Carnevale, A.P. (1992). Learning: The critical technology. San Francisco, CA: Jossey-Bass Publishers.

Carnevale, A.P. and Leila J.G. (1989) The learning enterprise. Alexandria, VA: American Society for Training and Development.

Carnevale, A.P., Gainer, L.J., and Meltzer A.S. (1991). Workplace basics: The essential skills employers want. San Francisco, CA: Jossey Bass Publishers.

Chang, F.T.J. (1991). The impact of the 1950s Sino-American industrial vocational cooperative project on the current technical vocational education in the Republic of China. Paper presented at the Annual Meeting of the American Vocational Association.

Changing role of vocational and technical education (1994). Washington, DC: Organization for Economic Co-operation and Development.

Charp, S. (March, 1994). Editorial. T.H.E. Journal, 21(8), 8.

Children's Monitor. (1991, April). Washington: DC: Child Welfare League of America.

Choosing the future: An action agenda for community colleges (1993). Sacramento, CA: California Community Colleges.

ClariNews. San Jose, CA: ClariNet.

Community Learning and Information Network. Washington, DC: U.S. Chamber of Commerce.

Conklin, J.J. (1994). The development of strategic plans for implementing distance education in social work education. Unpublished major applied research project, Nova University, Ft. Lauderdale. ED 360 892.

Critical trends for the 1990s (1989). Chadds Ford, PA: Research & Engineering Council.

Critical trends: Graphic communications industry (1994). Chadds Ford, PA: Research and Engineering Council.

Cunningham, L.C., and Payzant, T.W. (1983). Understandings, attitudes, skills, and symbols: Leadership in the future. University Park, PA: The University Council for Educational Administration, The Pennsylvania State University.

Curriculum and Evaluation Standards for School Mathematics. (1991). Reston, VA: The National Council of Teachers of Mathematics.

Daggett, W.R. (1990). Preparing for employment. Albany, NY: New York State Education Department.

Daggett, W.R. (1991). Identifying the skills students need for success in the workplace: Implications for curriculum and assessment. Schenectady, NY: International Center for Leadership in Education.

Danzberger, J.P., Kirst, M.W., and Usdan, M.D. (1992). Governing public schools. New times. New requirements. Washington, DC: The Institute for Educational Leadership.

Defense base closure and realignment commission 1993 report to the President (1993). Arlington, VA: Commission.

Design specifications. (1993). St. Paul, MN: Community Learning Centers.

Dyrenfurth, M.J. (1984). Literacy for a technological world. Columbus, OH: The National Center for Research in Vocational Education.

Educating Americans for the 21st century: A plan of action for improving mathematics, science and technology education for all American elementary and secondary students so that their achievement is the best in the world by 1995 (1983). Washington, DC: National Science Board Commission on Precollege Eduction in Mathematics, Science and Technology.

Education technology: Planning for the 21st century. (1991). Rockville, MD: Montgomery County Public Schools.

Emerging technologies: A survey of technical and economic opportunities. Washington, DC: Technology Administration, U.S. Department of Commerce, 1990.

Fact finding report (1994). Washington, DC: U.S. Department of Labor.

Federal Quality Institute (1993). Information network. Washington, DC: Federal QM Documents.

Federal Quality Institute (1993). Self-assessment guide for organizational performance and customer satisfaction. Washington, DC: U.S. Government Printing Office.

Federal TQM documents catalog and databases users guide. (1992). Washington, DC: Federal Quality Institute Information Network.

Gaining new ground: Technology priorities for America's future (1991). Washington, DC: Council on Competitiveness.

GATF training programs and technical certification (1992). Pittsburgh, PA: Graphic Arts Technical Foundation.

Gelman, D. (1992, April 20). Is the mind an illusion? Newsweek.

Gooler, D.D. (1986). The education utility: The power to revitalize education and society. Englewood Cliffs, New Jersey: Educational Technology Publications.

Goals for education: Challenge 2000. (1988). Atlanta, GA: Southern Regional Education Board.

 BEST COPY AVAILABLE

Gore, A. (1993). Creating a government that works better & costs less. Washington: U.S. Govt Printing Office.

Gould, S.B. (1970). Today's academic conditions. New York, NY: McGraw Hill.

Greater Philadelphia Consortium (1993). Science and technology education and training: A public/private partnership.

Greater Philadelphia regional data base index (1992). Philadelphia, PA: Greater Philadelphia Economic Development Council.

Greenfield, E. (1993, May). Evolution of the textbook: From print to multimedia. T.H.E. Journal, (20)10, pp. 12-17.

Groff, W.H. (1986). Perspectives on the Education and Training System of the Future. Columbus, OH: The Ohio State University Clearinghouse on Adult, Career and Vocational Education, 1986. (ERIC No. ED 272 774).

Groff, W.H. (1987). The learning community of the future: Education and training in the 21st century. Paper presented to the Commission on the Future of Community Colleges, American Association of Community and Junior Colleges, April 1987. ED 280 538.

Groff, W.H. (1991). Restructuring for the 90's and beyond: An era of smart homes, wired communities, intelligent systems, global networks, and fast forward learners in a borderless world. Washington, DC: George Washington University, Clearinghouse on Higher Education. (ERIC Document Reproduction Service No. ED 343 484)

Groff, W.H. (1992). Toward the 21st century: Preparing strategic thinkers in vocational, technical, and occupational education for building learning communities. (ERIC Document Reproduction Service No. ED 351 499).

Groff, W.H. (1993a). Toward the 21st century: Preparing proactive visionary transformational leaders for building learning communities. Leadership II Formative Evaluation of Cluster 37, October 14, 1989, through June 6, 1992. (ERIC Document Reproduction Service No. ED 352 126)

Groff, W.H. (1993b). Toward the 21st century: Preparing proactive visionary transformational leaders for building learning communities. Human Resources Development, Fall 1992. (ERIC Document Reproduction Service No. ED 359 412)

Grubb, W.N., Davis, G., Lum, J., Plihal, J., and Morgaine, C. (1990). The cunning hand, the cultured mind: models for integrating vocational and academic education. Berkeley, CA: National Center for Research in Vocational Education.

Habana, P.I. (1993). Building scenarios for education in Southeast Asia: The SEAMEO INNOTECH experience. Quezon City, Philippines: U.P. Diliman.

Halfway home & a long way to go (1988). Raleigh, NC: Southern Growth Policies Board.

Halpern, S. (1984). Any home a campus: Everyman's University of Israel. Washington, DC: The Institute for Educational Leadership.

Hatula, J. (1994). The creation of a human resources development program to affect changes in attitude of telecommunications personnel to improve customer service. Unpublished major applied research project, Nova University, Ft. Lauderdale.

Healthy America: Practitioners for 2005. (1991). Durham, NC: The Pew Health Professions Commission.

Health people 2000: National health promotion and disease prevention strategies. (1990). Washington, D.C.: U.S. Government Printing Office.

Health professions education for the future: Schools in schools in service to the nation. (1993). Durham, NC: The Pew Health Professions Commission.

Heinanen, J. (1993, August). Telecom Finland first with commercial ATM. REACHING OUT, (4), pp. 16-18.

Helm, L. (1993, October 24). Seen globally, U.S. information 'road' is barely paved. The Commercial Appeal, p. C1.

Henry, T. (1993, November 5). Gifted kids are bored in U.S. schools. USA Today, p. 2A.

Hoerr, J. (1988). And the wolf finally came: The decline of the American steel industry. Pittsburgh: The University of Pittsburgh.

Immunization Partnership: A Joint Project of Every Child By Two and the American Nurses Association (1993). Washington, DC: ECBT.

Information 2000: Library and information services for the 21st century. (1991). Washington, DC: U.S. Government Printing Office.

Initiatives for total quality schooling (TQS). (1993). Washington, DC: American Association of School Administrators.

Integration of vocational and academic education products (1993). Berkeley, CA: National Center for Vocational Education.

Jones, V.H., and Hutchins, E. (1993). Finding common ground: A call for collaboration. Arlington, VA: Nat. Center for Educ. in Maternal and Child Health.

Kagan, S.L. (1990). Excellence in early childhood education: Defining characteristics and next-decade strategies. Washington, DC: Office of Educational Research and Improvement.

Katz, L.G. (1992). Readiness: Children and their schools. Washington, DC: Educational Resources Information Center.

Kirsch, I.S., Jungeblut, A., Jenkins, L., and Kolstad, A. (1993). Adult literacy in America. Washington, DC: National Center for Educational Statistics.

Krol, E. (1992). The whole internet. Sebastopol, CA: O'Reilly & Associates.

Leading the way into the nineties (1989). Research Triangle Park, NC: Southern Growth Policies Board.

Leebaert, D. (Ed.).(1991) Technology 2001: The future of computing and communications. Cambridge, MA: The MIT Press.

Loftin, C.D. (1994). Development of a full service community family center for training purposes at Okefenokee Technical Institute. Unpublished major applied research project, Nova University.

Making Government Work: Electronic Delivery of Federal Services (September, 1993). Washington, DC: U.S. Government Printing Office.

Martin, J. (1978). The Wired Society. Englewood Cliffs, NJ: Prentice Hall.

Mathematics, science, and technology programs that work (1994). Washington, DC: U.S. Department of Education.

Melaville, A.I., and Blank, J. (1993) Together we can. Washington, DC: U.S. Government Printing Office.

Mintz, A.E. (1989, January-February). The futurist, XXIII (1), pp. 19-24.

Mikes, S. (1993, January-February). IN3 voice command. The X Journal.

Mobile messaging in the social branch. (1993, August). REACHING OUT, (4), pp. 32-34.

National excellence: A case study for developing America's talent (1993). Washington, DC: Office of Educational Research and Improvement.

Olson, R., Jones, M.G., and Bezold, C. (1992). 21st Century learning and health care in the home: Creating a national telecommunications network. Alexandria, VA: Institute for Alternative Futures.

Oregon Benchmarks (1992). Salem, OR: Oregon Progress Board.

Planning for educational excellence (1990). Doylestown, PA: Bucks County Intermediate Unit.

Putting the information infrastructure to work (1994). Gaithersburg, MD: National Institute of Standards and Technology.

Raspberry, W. (1991, February 4). The poor as people, not problems. The Commercial Appeal, p. A-6.

Reich, R. (1991). The work of nations: Preparing ourselves for 21st century capitalism. New York: Knopf.

Ricart, G. Connecting the networking dots. EDUCOM, 28(5), 36-41.

Samuelson, R.J. (1991). "A Shakeout in Services." Newsweek, CXVIII, pp. 64-65.

Satterlee, B.C. (1991). The development, implementation, and evaluation of a model for the review of associate of science degree programs. Unpublished major applied research project. Nova University, Ft. Lauderdale.

Science for all Americans. (1991). Washington, DC: American Association for the Advancement of Science.

Secretary's Commission on Achieving Necessary Skills. (1991) What work requires of school. Washington, DC: U.S. Department of Labor.

Secretary's Commission on Achieving Necessary Skills. (1992) Learning a living: A blueprint for high performance. Washington, DC: U.S. Department of Labor.

Shuman, B.A. (1989). The library of the future. Englewood, CO: Libraries Unlimited, Inc.

Silvertsen, M.L. (1993). Transforming ideas for teaching and learning science. Washington, DC: U.S. Government Printing Office.

Sheu, Y.C. (1985). The development of vocational industrial education in the Republic of China, Taiwan.

Superschools: Education in the information age and beyond. (1993). Hoffman Estates, IL: Ameritech.

Tech prep products. (1993). Berkeley, CA: The National Center for Research in Vocational Education.

Technology education in Pennsylvania program guide, K-12. (1993). Harrisburg, PA: Department of Education.

Telegate as part of ABB corporate network (1993). REACHING OUT (4), pp. 11-15.

The Lehigh Valley business-education partnership. (1991). Allentown, PA: Air Products and Chemicals, Inc.

Toch, T. (1991, August). Crafting the workforce. U.S. News & World Report, pp. 63-64.

Toch, T. (1993, January). The perfect school. U.S. News & World Report.

Together we can: A guide for crafting a profamily system of education and human services (1993). Washington, DC: U.S. Department of Education and U.S. Department of Health and Human Services.

Toner, M. (1992, August). Drug-resistant pneumonia, 'superclap' alarms doctors. The Commercial Appeal, p. A-12.

Turning to technology (1989). Research Triangle Park, NC: Southern Growth Policies Board.

U.S. Congress, Office of Technology Assessment. (1993). Adult literacy and new technologies: Tools for a lifetime. (OTA-SET-550). Washington, DC: U.S. Government Printing Office.

U.S. Congress, Office of Technology Assessment. (1988). Power on! New tools for teaching and learning. (OTA-SET-379). Washington, DC: U.S. Government Printing Office.

U.S. Congress, Office of Technology Assessment. (1988). Informing the nation: Federal information in an electronic age. (OTA-CIT-397). Washington, DC: U.S. Government Printing Office.

U.S. Congress, Office of Technology Assessment. (1989). Linking for learning: A new course for education. (OTA-SET-439). Washington, DC: U.S. Government Printing Office.

U.S. Congress, Office of Technology Assessment. (1990). Critical connections: Communication for the future. (OTA-CIT-408). Washington, DC: U.S. Government Printing Office.

U.S. Congress, Office of Technology Assessment (1993). Making government work: Electronic delivery of services. Washington, DC: U.S. Government Printing Office.

U.S. technology policy (1990). Washington, DC: Office of Science and Technology Policy.

Vocational-technical education: Major reforms and debates 1917 - present (1973). Washington, DC: U.S. Department of Education.

Wriston, W.B. (1992). The twilight of sovereignty: How the information revolution is transforming our world. New York, NY: Charles Scribner & Sons.

Yff, J., and Butler, M.J. (1983). Technological literacy: Challenge for teacher education. (Report No. SP 021 725). Washington, DC: ERIC Clearinghouse for Teacher Education, American Association of Colleges for Teacher Education.

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What is not yet done
is only what we have not yet attempted to do.
-- DeTocqueville

WARREN H. GROFF

Warren Groff is a consultant and a national lecturer for Nova University. He taught in the public schools in Pennsylvania, served as an Assistant Dean in the College of Education at Temple University and taught doctoral seminars in higher education, consulted for the American Board of Pediatrics and the Governor's Justice Commission of Pennsylvania, served as Vice President for Academic Affairs at a private college, was the executive director of a consortium involving a medical college and two universities, served as Vice President for Academic Affairs for seven years and then director of research and development at North Central Technical College in Mansfield, Ohio, and was Dean of Academic Affairs at Shelby State Community College in Memphis, TN.

He has written extensively on the topics of leadership, human resources development, strategic planning, and economic development. He chaired the statewide Task Force on High Technology for the Chancellor of the Ohio Board of Regents in 1982-83 and also served on the OBR Telecommunications Committee. From 1978 to 1986, he chaired the Plan Development Committee of an eight county health systems agency and also served as Vice President of the 45 member Board of Directors from 1984 to 1986. In 1984, he chaired a 44 member Consolidation Committee for School Improvement for the Board of Education for the Mansfield City Schools. He served as president of the College of Education Alumni Society of Pennsylvania State University from July 1984 through June 1986.

He has been one of the two faculty of the week-long Snowmass Institutes on Strategic Planning for eleven years, 1980-1991. He has conducted workshops on strategic planning for the Massachusetts Board of Regents; Tennessee Board of Regents; Directors of Research, Planning, and Development of the Vocational, Technical, and Adult Education Districts in Wisconsin; Texas Association of Chief Community College Student Affairs Administrators; and the Nebraska Community College Association. He consulted with the National Center for Research in Vocational Education. Groff assisted a hospital in a year-long strategic planning process and has conducted several strategic planning workshops for school boards associations. He was the keynote speaker at the fall 1991 Conference of the Council of North Central Community and Junior Colleges on "Restructuring for the 90's and Beyond." He was the keynote speaker at the 1991 Vocational Education Symposium in Taiwan, Republic of China; he helped to facilitate a strategic planning workshop and spoke again in Taiwan in 1991. He is quoted in Building Scenarios for Southeast Asia: The Seameo Innotech Experience (1993). He was keynote speaker on the topic "Developing an Environment for Solution-Based Learning" at the 1993 annual meeting of the Mid-America Conference on Competency-Based Education and Training. He was a work group moderator on organizational barriers at the National Summit on Integration and Tech Prep sponsored by The National Center for Research in Vocational Education in June 1993. He conducted a Group Session and Action Lab on "Restructuring for the 90's And Beyond" at the Education Technology Conference of the New Jersey School Boards Association in February 1994.

Groff has taught 89 doctoral seminars to over 1675 students throughout the U.S. for Nova University. He has taught Human Resources Development, Governance and Management, and Emergence of Vocational, Technical and Occupational Programs in the Ed.D. Programs in Higher Education. The cycles in vocational, technical, and occupational education were Agents of Change, 1984-85, ED 272 247; Transformational Leaders, 1986-87,ED 190 860; Strategic Thinkers, 1988-89, ED 319 882; Restructuring Establishments, 1990-91, ED 335 519, Building Learning Communities, 1992, ED 352 126. He taught Political Processes and Social Issues in the Ed.D. Program in Early and Middle Childhood. He teaches Leadership I and II in the Ed.D Program in Child and Youth Studies. Leadership I begins the program and Leadership II concludes the three-year program. He has started 13 clusters with Leadership I, including 5 National Clusters in a multi-tech format. Several clusters have concluded the program with Leadership II (ED 352 126), including one cluster in a multi-tech format.

He conducted strategic planning workshops for the Center of Substance Abuse Prevention of the U.S. Department of Health and Human Services and has provided technical assistance to many Building Community Partnership grantees.

Groff graduated from Millersville University with a B.S. in Ed., from The Pennsylvania State University with an M.Ed., and from Temple University with an Ed.D.

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